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## ABSTRACT

Eight papers from a 1983 symposium of music educators and psychologists summarize current knowledge and theory in motivation and creativity and apply this research to the teaching and learning of music at all levels. Emphasis is on practical implications for music teachers in day to day instruction. Topics addressed in the papers are: task involvement in music (John Nicholls), developing continuing interest in music (Martin Maehr), developing creativity through music education (Stanley Gryskiewicz), the step-path theory (Joel Raynor), creativity and talent (Michael Wallach), children's motivation to study music (Jacquelynne Eccles), aesthetic properties of musical compositions (Dean Keith Simonton), reasons students opt to drop musical instruction (Martin Covington), and creativity and problem-solving (Donald Treffinger). A summary section reviews symposium findings and major themes. A list of symposium participants concludes the proceedings. (LP)

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# Documentary Report of the Ann Arbor Symposium on the Applications of Psychology to the Teaching and Learning of Music: Session III

## Motivation and Creativity

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Music Educators National Conference  
1902 Association Drive  
Reston, Virginia 22091

RUSSELL P. GETZ, *President*  
Music Educators National Conference

PAUL R. LEHMAN, *Project Director*  
The University of Michigan

PAUL C. BOYLAN, *Dean, School of Music*  
The University of Michigan

WILBERT J. McKEACHIE, *Director*  
Center for Research on Learning and Teaching

MORRIS DUANE, *President*  
Theodore Presser Foundation

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## Foreword

One of the most notable developments in music education in recent years has been the realization by music educators of the important contributions that can be made to their field by psychology, sociology, anthropology, and related disciplines. The first result of the effort to learn from colleagues who may be in a position to help came with the National Symposium on the Applications of Psychology to the Teaching and Learning of Music (the Ann Arbor Symposium).

The first two sessions of the Ann Arbor Symposium, sponsored by the Music Educators National Conference, the University of Michigan, and the Theodore Presser Foundation, were held in Ann Arbor from October 30 to November 2, 1978, and from July 30 to August 2, 1979. An interpretative report on the two sessions appeared in the March 1980 issue of the *Music Educators Journal* and was reprinted for further distribution, and the complete papers were published as the *Documentary Report of the Ann Arbor Symposium*.<sup>1</sup> The symposium generated widespread interest among both researchers and practitioners in music education, and among psychologists as well. Further, it produced a strong desire for follow-up activities.

A number of sessions at the MENC national meetings in Miami Beach in 1980 and Minneapolis in 1981 were devoted to the symposium. In June 1980, MENC and the University of Akron sponsored the Akron Institute in Akron, Ohio, to prepare college teachers to present workshops through intensive study with leading psychologists. A series of workshops, held at various institutions throughout the nation and cosponsored by MENC, took place during the summer of 1981. These activities were

planned by the MENC Committee on Interdisciplinary Programs, which was created in 1979 and charged with responsibility for coordinating follow-up activities to the Ann Arbor Symposium and initiating new activities concerned with other disciplines.

The third session of the Ann Arbor Symposium was intended to provide further structured contacts with psychologists and to take maximum advantage of the initiatives that had already proven fruitful. Sessions I and II covered a variety of topics and were exploratory in nature. Session III was devoted to only two topics, motivation and creativity, and dealt with them in greater depth. These topics were selected because they are of great current interest to music educators and because they are topics in which there is much to be learned from psychology.

The purpose of Session III was to summarize current knowledge and theory in motivation and creativity and to apply the results to the teaching and learning of music at all levels. The emphasis was on practical implications for the music teacher in day-to-day instruction. The papers from Session III are contained in the present publication, but despite the excellence of these contributions by distinguished psychologists, the ultimate responsibility for identifying those ideas that are relevant to music teaching and translating them into practice lies with music educators. The process of interpretation and implementation was begun in Ann Arbor but must be continued by each of us. The stage is set. MENC, the University of Michigan, and the Theodore Presser Foundation hope that the result of the Ann Arbor Symposium will be further improvement in the quality of music instruction in the nation's schools and colleges.

MENC Committee on Interdisciplinary Programs  
William S. English, Chairman  
Gerard L. Knieter  
Paul R. Lehman

<sup>1</sup>Both publications are available from MENC, 1902 Association Drive, Reston, Virginia 22091.

# Task Involvement in Music

JOHN G. NICHOLLS

In the film *From Mao to Mozart: Isaac Stern in China*, Stern was shown working with violin students who were near graduation and eager to demonstrate superior ability so as to gain themselves the best jobs. We were told they chose the most difficult pieces they could master, and they performed these difficult pieces with technical proficiency. Stern's reaction was, I thought, instructive for us as well as the students. He stopped and gently rebuked one of these wizards, saying, "Each note has its reason."

My interpretation of Stern's intervention was that he wanted the student to see the music as an end in itself rather than as a means to the end of demonstration of superior ability. The student was using the music to display his virtuosity and the quality of his playing reflected this goal. The beauty of the music was, for him, of secondary importance. It seems Stern is quite different. What strikes me is his love of music. His virtuosity enables him to create beauty; it is not his virtuosity in itself that he seeks to display.

The motivation of these Chinese students seems to have more in common with that of a football player out to impress the scouts than with that of a master musician out to create something of beauty. The inappropriateness for music of this extreme, competitive form of motivation is illustrated in ludicrous style in the P.D.Q. Bach version of Ludwig van Beethoven's Fifth Symphony (*Report from Hoople: P.D.Q. Bach on the Air*, VSD-79268) in which two imitators of sports commentators give a play-by-play of the New York Mills Philharmonic's contest with the Danish conductor, Heilige Dankezan. After a crowd-pleasing performance (in which an oboe player, in unsportsmanlike fashion, inserts a cadenza and in which, on several occasions, nobody seems to be able to keep their hands on the theme) Dankezan wins "a very important victory." This

inspired madness and the Chinese students' playing illustrate the inappropriateness of extreme competitive motivation for music performers. I call this competitive form of motivation, in which the aim is to look more able than others, ego involvement, and contrast it with task involvement (Crutchfield, 1962; Nicholls, in press).

When individuals are task involved, learning or performing is an end in itself. Task involved people feel competent if they achieve their personal best or if they make real gains in mastery. When ego involved, on the other hand, one's personal best or a gain in mastery is often not enough to produce a feeling of competence. When ego involved, individuals are more consciously self-evaluative, and competence is indicated by performance that is superior to that of others. Ego involved individuals have to beat someone. For them, the performance is not an end in itself, but a means to the end of demonstrating superior capacity. In other words, ego involvement is a form of extrinsic motivation in which learning or performance is not intrinsically valued. (There are many other forms of extrinsic involvement; practicing music to get Dad off your back or to get a present are examples.) Schools, especially junior high and high schools, tend to promote ego involvement (Eccles [Parsons], Midgley, & Adler, in press), whereas they should, I argue, promote task involvement.

The contrast between task and ego involvement is also illustrated by Sylvia Plath's (1982) attempts to come to terms with a new teaching job. She struggles to avoid ego involvement and to find satisfaction in steady improvement.

I am middling good. And I can live being middling good. I do not have advanced degrees, I do not have books published, I do not have teaching experience. . . . I cannot

rightly ask myself to be a better teacher than any of those teaching around me with degrees, books published, and experience. I can only, from day to day, fight to be a better teacher than I was the day before. If, at the end of the year of hard work, partial failure, partial dogged communication of a poem or story, I can say I am easier, more confident and a better teacher than I was the first day, I have done enough. I must face this image of myself as good for myself, and not freeze myself into a quivering jelly because I am not Mr. Fisher or Miss Dunn or any of the others.

Cecil Day-Lewis (1969) advised that each poet "must go on writing as best he may, learning to stop worrying about his stature, his rank in the hierarchy...and to become ever more fully absorbed in the task." This is good advice for musicians too; it is important for teachers to think about what sort of motivation they want to encourage rather than to simply worry about fostering high motivation. High levels of task involvement seem preferable to ego involvement or extrinsic involvement.

Am I right to suspect that music teachers are sometimes upset that their students generally take math more seriously than music? In interviews about the importance of school I conducted with junior high and high school students, the importance of math was often mentioned, but I recall no one mentioning music. Math is apparently seen as important as a means of entry to higher education and to many occupations. This sort of rationale for learning appears to induce ego involvement. It seems important to students to do better than others in math, and because everybody can't be above average, a lot of students have to feel dumb. Even those who do not feel dumb may see math merely as a means to an end. Competitive grading practices, common in math classes, also contribute to ego involvement—they make students become concerned about how their ability compares with that of others and make learning a means to an end.

If music teachers occasionally wish their students would take music as seriously as math, I hope they will reflect on these phenomena. But consider, on the other hand, the behavior of happy people with no special demands on them. Don't they often sing? Drunks leaning against walls, cyclists with radios on their handlebars, and professors in the shower all sing. I don't notice a lot of people doing math in order to express their joy (or for that matter their sadness) with life. I am ready to bet that high school graduates as well as dropouts spend more money on music records and concerts than they do on math books and lectures. If this is true, maybe music teachers aren't doing too badly. At least they don't seem to have killed too many persons' appreciation of music. There is reason to believe that they would have if music was seen as important for academic and occupational success and was taught the way math is usually taught.

### Suggestions

Let me make some positive suggestions about how to increase and sustain task involvement. First, consider the matter of philosophy—what is the purpose of music? What do we want children to see as the purpose of music?

I don't think I can answer this very well. I hope music teachers have better answers than I do. But I advance the hypothesis that if you convey the idea that music is a medium for the creation and expression of beauty and some of the more important human sentiments, you will do something to sustain intrinsic enjoyment of music. If you try to make music seem important in the way math seems important—as a means of success—you will probably not be believed. Even if you are, you may make music a necessary evil rather than an end in itself. My first suggestion, then, is that we spend time considering the functions students think music serves, the functions our teaching suggests music serves, and the most inherently justifiable purposes of music education.

Adam Hochschild's (1982) reflections on what he learned at prep school are interesting in this context. He said, "I learned for the first time that words could mean more than their surfaces. I learned that music could say things words could not" (p. 48). No doubt his music teachers would feel they helped him achieve something significant regardless of whether he ever mastered the clarinet or gained a place in the school orchestra. He gained some appreciation of the unique contribution music can make.

Second, there is the matter of choice or student self-determination. Research on other school subjects shows that offering students increased choice of what to work on and of methods of working can increase task involvement. Even giving students choice of the order in which they do teacher-assigned work can increase involvement. Students who are always doing something the teacher selects and are doing it when the teacher directs are likely to feel they are doing it because they have to rather than because they want to (Nicholls, in press).

This does not imply we should ask students whether or not they want to perform or listen to music. This would be opting out. But teachers might offer real choices between the best possible materials and methods. Music offers the possibility of more student choice than many other subjects do. Might it not be better to encourage a genuine involvement in one or two student-chosen forms of music than to force some knowledge either of many forms or of those specific ones the school values? A strong appreciation of one form seems more likely to lead to appreciation of others in later years than would an aversion to the school's specialty.

If this general idea makes sense, consider (1) the range of forms of music and methods that are most valid and most likely to appeal to students; (2) the methods of giving students enough familiarity with these forms to enable a reasonably informed or, for the student, meaningful choice; and (3) the methods of organizing programs so that students are able to pursue their developing commitments and teachers are able to guide them effectively in these areas. The goal of getting students to take increasing responsibility for their own learning appears worthwhile, but it probably requires more ideas, skill, planning, and dedication on the part of teachers than relatively traditional methods. I suspect that there are plenty of good ideas out there that could be shared.

Third, consider the matter of standard setting. Individual music teaching probably represents the ideal situation. Here the student and teacher can focus on what the student is learning and on the business of improving on the student's performance. Classes and orchestras are likely to encourage comparisons between students rather than with own previous performance. The upshot is ego involvement; students who think they lack ability become anxious and dislike the subject, and even those who are capable and feel capable may see learning as a means to an end rather than an end in itself.

I do not imply that students should not observe performers who are more skilled or artistic than they. Task involvement does not mean that you never compare your performance with that of others. But there is a world of difference between observing a master or a more competent student to learn from him or her and observing merely to see how capable you are. The emphasis needs to be on the former if we want task involvement. We must look to others to learn. If we look to Isaac Stern to evaluate ourselves instead of to learn, we will probably all have good reason to give up.

I have often heard people extol competition as getting the best out of students and encouraging them to assess their abilities realistically. These people do not confront the findings of experimental research that unrealistic levels of aspiration are more common in competitive, ego-involving conditions. When there is pressure to look smart compared to others, people are more likely to set unrealistically high or low goals. Those who think their ability compares unfavorably with that of others also perform distinctly worse in these conditions (Nicholls, *in press*). Because learning is an end in itself for students when they are task involved, they set more realistic standards and derive satisfaction from reaching these.

Of course, children have to deal with some competition and learn to live with comparisons of their performance with that of others. Naturally, some degree of competition is necessary for selection of band and orchestra members. But it is not necessary to have constant competition for places or chairs. A cooperative approach to learning has more chance of fostering task involvement. Task-involved students are more likely to learn from those who are better than they are and less likely to be devastated by learning that they are not outstanding.

Finally, there is the less tangible matter of teacher enthusiasm for the subject and for student accomplishments. The power of imitation is well established and we would thus expect that a teacher's delight in music would be contagious. It also seems that effective teachers focus on the student's performance rather than on the student him- or herself. This implies a distinction between praise and encouragement (Covington & Beery, 1976). Praise focuses on the person rather than on what he or she is doing and tends to be coercive in the way a bribe is. Thus, it can induce ego involvement and make learning a means of gaining praise. Encouragement, on the other hand, is an expression of pleasure with what students are learning and hope for what they will learn. It should encourage task rather than ego involvement.

Those of you who have seen the film of Isaac Stern in China have seen some splendid examples of enthusiasm for both music and student accomplishments in music. I particularly recall his treatment of a girl whose playing was stilted. He asked her to hum the piece. She was embarrassed, but eventually hummed it more lyrically than she had played it. Stern beamed and told her to play it that way. She did so to Stern's visible delight. She appeared not only to learn from this encouraging treatment, but to enjoy the music more.

## Conclusion

I am well aware that it is easier for me to advocate task involvement than it is for anyone to achieve it in schools. Music teaching, especially in junior high and high schools, is not made easier by the ego-involving climate that often prevails there. When students are kept in their seats much of the day by a desire for high grades or a fear of low ones, it is a Sisyphean task to establish a haven where learning or performing is an end in itself. Students don't know how to react during that one period of freedom.

The problems associated with ego involvement also become more acute at junior high and high school age because at about 11 years children develop the concept of ability as capacity (Nicholls, 1978). Younger children conceive of ability as relatively changeable—as something that can be fairly easily improved by effort. When conceived as capacity, ability is seen as much harder to change. Consequently, it is more serious for older students to believe they lack ability. Low perceived ability leads to more serious performance decrements when the conception of ability as capacity develops (Nicholls & Miller, *in press*). Consequently, poor performance in competitions and low perceived ability are more likely to produce stronger dislike of the subject and more determined attempts to avoid it in older students. In summary, it becomes harder to avoid the negative effects of ego involvement as children mature, and it becomes increasingly important, if music is to be valued for its unique contribution, that ego involvement be minimized.

There is no easy technique for inducing task involvement. In fact, we could use a lot more research on methods of achieving this. I've made suggestions in this article for which there is limited empirical support. Even if there were more relevant and supportive evidence for these suggestions, teachers should never accept them uncritically. The question of what we want to achieve with music is an ethical or value question more than an empirical or psychological question, and, my suggestion that we encourage task involvement reflects my own values. I argue that if music is taught the way math is often taught it will lose its essential function. So, although I have suggested some ways of encouraging task involvement, my main point is a philosophical as much as a psychological or methodological one. It is that we should want people to want to make a joyful noise unto the Lord, their neighbors, or the birds in the backyard. The danger I see for music is that it might be treated like too many other school subjects. Then only the birds will be singing.

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# The Development of Continuing Interests in Music

MARTIN L. MAEHR

Last March, I chanced to come across an article by Donald Henahan (1982) in the *New York Times*. I do not know the author, nor do I have any feel for the quality of scholarship that supports his statements. But I was and am intrigued with the problem he posed. In nontechnical terms, he underscored the importance of motivation in understanding achievement in the arts. As one who has tended to do motivational research in other areas and to simply enjoy music, I was at first amused and later fascinated.

The title of Henahan's article is "The Mystery of the Dropout Composer." In the first paragraph, the essence of the content is set forth:

Some day the brain doctors may be able to explain to us the final mystery: why certain people are driven to build, or paint, or write, or compose—and why they go right on wanting to do so until the lid is snapped shut on them. Just the other day, word arrived in the mail that Efrem Zimbalist, the violinist, had completed a new work at age 92. Tell the truth now: did you even know he was still alive, let alone that he was a composer? What drives such people? Soon, we may know. By giving the patient the right pill or jiggling his electrodes just so, neurologists will be able to turn on the faucets of creativity in any talented person. Books will be completed on schedule, scores will be turned in when promised, poems will no longer lie unfinished in desk drawers. Artistic block will have gone the way of the smallpox virus and the Black Death.

Henahan goes on,

But until all that comes to pass, we appear to be stuck with artists who refuse to perform predictably. Consider the cases of Rossini, Sibelius, Ives, Elgar and Copland, who make a

mixed bag of creators, but by no means a random assembly. They have one thing in common: all gave up composing at the height of their careers. (p.1)

That similar motivational problems plague the performer as well as the composer is illustrated in a short story by Nicholson Baker (1982) in the *Atlantic Monthly*. Baker described a slightly mad genius by the name of Zeno whose medium of experience is the trombone. Zeno's problem is nicely summarized and interpreted by Henahan (1982).

Zeno the trombonist, frustrated at his inability to attain perfection as a player, finally makes his first mistake in performance. He cracks on one horribly exposed high note and his soul shatters. Like Rossini and Elgar and Sibelius and Ives and Copland, he makes peace at last with the idea that after a certain point no artist can make discernible progress toward his artistic goal. What good is it to write a Tenth Symphony that is better than your Ninth if nobody, even you, can make out the difference? As for Zeno, although still potentially the greatest trombonist in the world, he finds contentment as second trombone in the Mammoth Symphony Orchestra. He drops out, perhaps to try again later in life, like Verdi.

Mr. Baker's Zeno reminds us that composers are not the only artists who must face the reality of diminishing achievement. Vladimir Horowitz, a kind of piano-playing Zeno, dropped out of concert life several times for long periods. Glenn Gould, similarly dedicated to chasing the chimera of perfection, stopped performing in public many years before his death. Arturo Benedetti Michelangeli, the Italian Horowitz, cancels more concerts than he gives, perhaps for Zeno's reasons. Toscanini used to break batons and ram his fist through dressing room walls because perfection was continually eluding him and his elite crew of musicians. (p. 23)

Although the analysis of causes Henahan presents is less than satisfying, someone interested in the psychology of motivation cannot ignore the kind of problem he presents. It is such starting, stopping, and changing in the direction of behavior that forms the grist for the motivational theorist's mill. Further, motivation and achievement is a particularly fascinating topic in the case of the truly talented. Yet, it is not really the Coplands, the Sibeliuses, the Rossinis, or the apparently more continuously motivated Bachs of the world that claim the attention of most of us. Rather, it is the Joneses, the Smiths—and lest I forget, the Maehrs. Some of them may become great. Most of them will, at best, find enjoyment in attending concerts, playing the recorder in a family ensemble, and singing in the church choir at Christmas. The motivation of these rank amateurs must also receive the attention of music educators. Indeed, a case can be made that this should and must be the primary concern. After all, we amateurs are the majority, and we ultimately pay the cost of maintaining a musical elite. Music is not unlike sports in this regard. I suspect that sports flourish in large part because of enthusiastically committed and reasonably knowledgeable fans. Creating music fans may be equally important to creating music geniuses if the aesthetic enterprise is to survive and remain healthy.

In any event, although the importance of the questions I pose may be self-evident, the answers are far from evident. It may even seem like unmitigated gall that I would presume to address such complex, hard to define, and difficult to resolve problems. Nevertheless, I will risk hubris. The problems associated with creating, fostering, and retaining continuing interest and motivation in music are indeed multifaceted and complex. But they are also too important and too intriguing to ignore. I intend, first of all, to discuss the outline of a theory of motivation that my colleagues and I are constructing to explain such complex motivational phenomena. Significantly, we are referring to it as a theory of *personal investment*<sup>1</sup> rather than a theory of motivation. I will treat one particular issue that I suspect may be of importance to all educators: that amateurs are not elites, talent-wise or motivation-wise, and elites are not amateurs. I hope I can provide you with enough theory and sufficient specification of that easy-to-state, but exceedingly complex, issue to stimulate your thoughts, questions, and concerns.

### Theory of personal investment

The theory of personal investment has a long history. Most immediately, it grows out of past and current work on achievement motivation (see, for example, Maehr, 1974, 1976, 1978, in press; Maehr & Kleiber, 1981; Maehr & Nicholls, 1980). We now call it a theory of personal investment, since that term reflects a particular perspective that guides our work. Briefly, that perspective is shown in three working assumptions of the theory:

1. Motivation is basically indicated by three types of behavior: the *choices* the person makes, the *persistence* demonstrated, and the *level of activity* exhibited. The business of motivation theory is basically to predict variation in these patterns.

2. In the vast majority of cases, the primary concern is with choice and persistence or with the direction of behavior. The person is reasonably active; it is primarily a question of why he or she is active in one way and not in another. One might suggest that motivational problems are not essentially problems of motivating people (i.e., activating them) but rather problems of directing behavior. In most cases, it is misleading to suggest that a student is not motivated; it is more appropriate to suggest that he or she is motivated in one but not another way. He or she is investing personal resources differently.

3. The theory is a cognitive theory. It assumes that the primary antecedents of choice, persistence, and variation in activity level are particular thoughts, perceptions, and beliefs that the person has. The best predictors of when the person will exhibit this or that behavioral direction are embedded in beliefs about self and the situation that can be assessed in a reasonably reliable and valid fashion. The person is viewed as making investments of personal resources following his or her own psychology.

### OUTLINE OF THE MOTIVATIONAL CYCLE

Given these rather broad and general characteristics of the theory, further elaboration must involve the motivational cycle that is envisioned. Figure 1 contains a sketch of such a motivational cycle. There are several features of this cycle that may be noted:

1. Personal investment (PI) is primary. It determines the putting forth of effort (choice, persistence, and activity level). In turn, it is affected by the results of effort, which are mediated by the performance level and evaluation.

2. Performance level is not a direct function of PI or effort. There are invariably other factors that are involved. A primary one of these is the skill of the person performing. The organization of the task is likewise important. Simply put, there is effective and ineffective effort. If the learning task, for example, is poorly organized and presented, increased effort on the part of the student may be misdirected and futile. One can be motivated but still spin one's wheels.

3. Performance characteristically results in certain outcomes that are likely to be defined in large part by an evaluation or performance appraisal process.

4. Finally, the perceived outcomes are interpreted by the person and yield decisions about continuing PI in the task.

### COMPONENTS OF PERSONAL INVESTMENT<sup>2</sup>

While all these facets of the motivational cycle could claim our attention, I am going to focus here on PI. It is truly a critical, if not the most critical, feature of the moti-

<sup>1</sup>Kelly (1982) has used this term in the analysis of leisure behavior. The present adaptation expands the usage somewhat, though still reflects some of the original intentions.

<sup>2</sup>An Inventory of Personal Investment has been developed for use with adults and is currently the subject of considerable research (Braskamp & Maehr, Note 1).

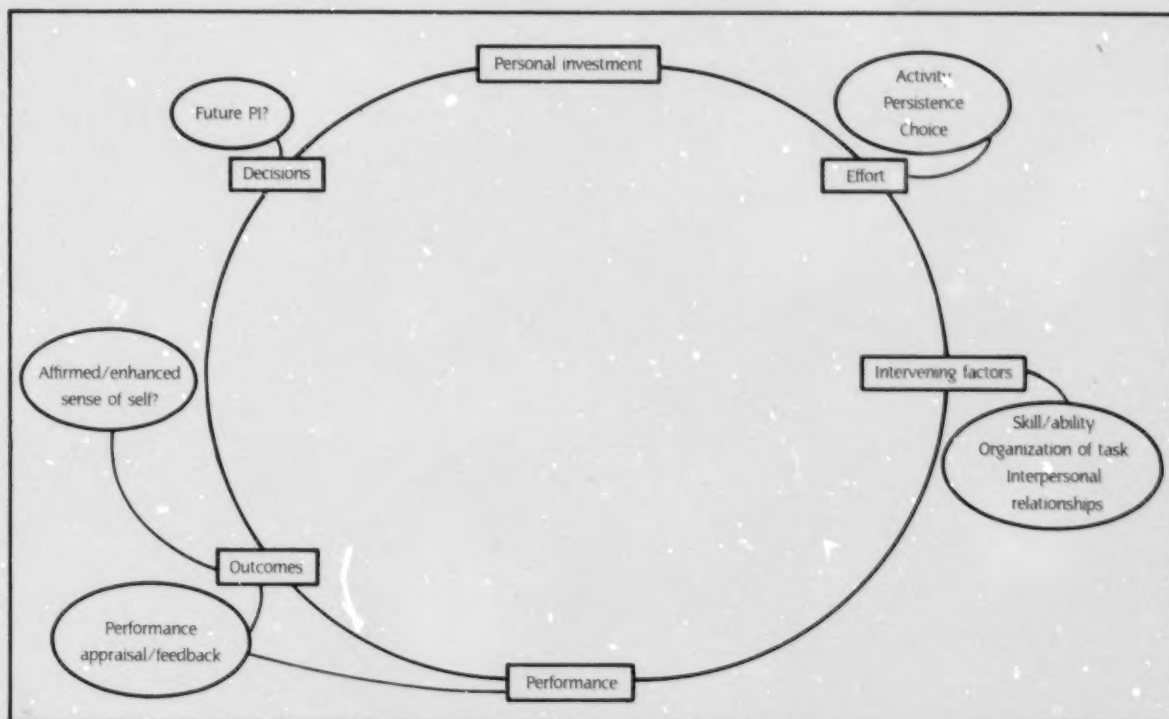


Figure 1. Outline of the motivation cycle.

vational cycle as we envision it. It is also the feature that primarily claims our attention at the moment. Figure 2 outlines the essential components of PI and suggests factors that may influence it.

*Action possibilities* are the behavioral alternatives that a person perceives to be available in a given situation. Clearly, one will not choose to do what is not perceived as possible. Involving oneself in one or another event is, in the first instance, dependent on the knowledge of this event. It is likewise dependent on the perceived acceptability of participation in terms of one's definition of self within a particular framework. Thus, a choice to take up the violin is not a viable option for certain students, unless someone intervenes to expand their range of action possibilities. Moreover, it would take more than simple instruction in the existence of the instrument and the opportunities available to the person who plays such an instrument. In spite of whatever instruction might be given, the person will, in most cases, continue to reside within a sociocultural matrix that not only defines other, more salient, options, but also pointedly excludes the option of playing the violin.

*Performance goals* is a term generally used to refer to the motivational focus of the activity: What does the person expect to get out of performing? What is the value of the activity? More concretely, how does the person define "success" and "failure" in this situation?

One might imagine that goals could be of an unlimited number. Perhaps they are. For reasons of convenience, we have tended to focus on four that have considerable precedent in research literature. These are presented and

briefly defined in Table 1. (Note that they may be thought of as existing along an intrinsic-extrinsic rewards continuum.)

*Sense of self* is likewise composed of a number of different components. These components are set forth and briefly defined in Table 2. Again, each can be discussed at length, but I will limit myself to discussing sense of competence for reasons that should become obvious later. By *sense of competence*, I refer specifically to a subjective judgment a person makes about his or her ability to perform effectively. It is the judgment that one can do something or that one cannot. This judgment varies in degree and extent. Thus, it may be limited to one particular area or generalized broadly across a variety of performance domains. Some people will be more, some less confident of their abilities. In any event, we are referring to a subjective judgment that a person is likely to make about his or her ability to succeed at a task if he or she tries.

#### ANTECEDENTS OF PERSONAL INVESTMENT

As indicated in Figure 2, several factors influence PI. These are designated *task design*, *personal experience*, *instruction*, and *sociocultural context*. The factors tend to affect the various components of PI differentially. Thus, personal experience seems to have a major impact on one's sense of self, whereas instruction and the sociocultural context tend to be especially important in defining behavioral options. Within this causal framework there is a particularly interesting interaction that is of special importance to the points to be made ultimately in this paper.

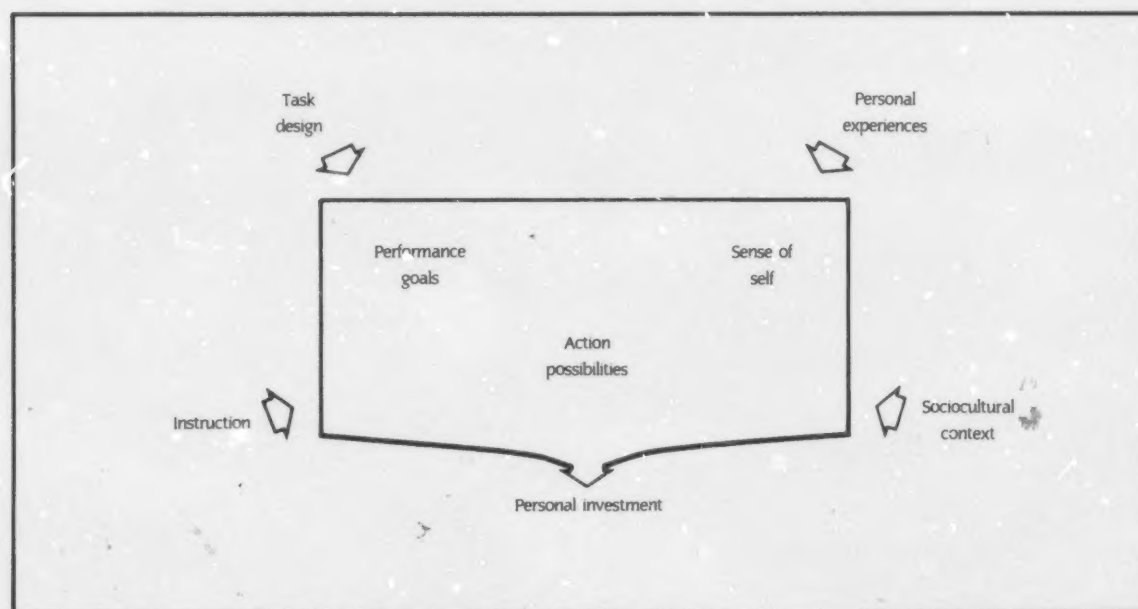


Figure 2. Causes and components of personal investment.

That interaction involves the responsiveness of persons to task and ego goal conditions.

In most instructional situations it is easy to emphasize social competition and comparisons with the performance of others. Such an emphasis tends to create what is here termed an *ego goal* situation. In contrast, one can design a task such that the emphasis is not on who is the best but on the process of performing the task for its intrinsic value. In this case, the stress would be placed on facilitating the learner/performer in making progress toward his or her own goals. Such a stress on the inherent value of the task to the individual leads to what is here termed a *task goal* situation.

These two different goal situations tend to have quite different effects on motivation and performance. Consider the example of an individual who happens to have a low sense of competence in regard to a specific task. The ego situation will obliterate whatever positive motivation that person might have had initially, for such a situation tends to reinforce all the worst fears that a person with a low sense of competence is likely to have about his or her ability to perform. It fosters a fear of failure and reduces hope of success, causing persons with a low sense of competence to avoid the situation in any way they can. Conversely, the task goal situation, insofar as it reduces the focus on one's competence, reduces these feelings and encourages persons to try challenging tasks. Under task goal situations, all are encouraged to go beyond the realm of certainty and explore new possibilities. Under the ego goal situation, only the confident will confront challenge by choice.

When I describe task and ego goals in this manner, most teachers readily recognize them. They also exhibit an awareness of individual differences in response to situations such as I have described. In addition, there is a large

body of literature that tends not only to map out the existence of such goal states but also illustrates how they arise and function (cf., for example, Maehr, in press). In any case, this example should illustrate how the model works in a specific instance of some importance in many educational settings.

#### Motivating elite performers and their fans

I like to think that personal investment theory, preliminary as it may be, has potential for stimulating productive work on a wide range of interesting questions. In spite of the brevity of my review, perhaps you have been motivated to think about several old problems in new and productive ways. To further encourage this, I will conclude by focusing on a problem mentioned earlier: the dual, and sometimes conflicting, need to motivate elite performers as well as their potential fans. My comments center on three points: that elite performers are indeed different, that they should not establish the norm, and that the norm should not restrain the elite.

#### ELITE PERFORMERS ARE INDEED DIFFERENT

Recently, I have reviewed evidence on motivational differences of elite performers in a wide variety of areas. First, I served as a critic/discussant at a symposium in which Benjamin Bloom's research group presented its preliminary findings on the characteristics of elite performers in five different areas: athletes (tennis players, swimmers), musicians (pianists), mathematicians, artists (sculptors), and neuroscientists (Bloom, Note 2). There are many facets of that fascinating project that deserve to be repeated, but there is one I will stress. Not surprisingly, motivation was a primary distinguishing factor. Thus, two siblings might be equally talented, but something generally described as "drive" distinguishes the child who later becomes great.

TABLE 1. POSSIBLE GOAL CATEGORIES

| Intrinsic                      |                          | Extrinsic           |                   |
|--------------------------------|--------------------------|---------------------|-------------------|
| Task                           | Ego                      | Social solidarity   | Extrinsic rewards |
| Understanding something*       | Doing better than others | Pleasing others     | Earning a prize   |
| Experiencing adventure/novelty | Winning                  | Making others happy | Making money      |

\*These descriptive statements have been adapted from the *Inventory of Personal Investment* (Braskamp & Maehr, Note 1).

Reading between the lines in this qualitative study, I also inferred that what was described as motivation was coupled with a high sense of competence. At an early stage, elite performers come to believe that they are exceptional, and their talents become the focus of the family's attention.

This observation of the role of motivation fits in with my own review of research on the development of outstanding scientists (cf. Maehr, in press). Repeatedly, motivation is a primary distinguishing factor. Among the components of motivation, sense of competence again looms as especially important, if not absolutely primary. Similarly, other researchers in the area of sport psychology (see, for example, Roberts, in press; Martens & Burton, Note 3; Roberts & Kleiber, Note 4) stress the role of motivation in general and the role of what can be called sense of competence as a necessary ingredient in the process of becoming one of the best. Moreover, it is not just that these performers are recognizing the obvious—there are those with talent who have difficulty in recognizing it. A secure sense of competence distinguishes the truly elite performers. The elite performers have confidence in their ability to do what has to be done when it has to be done. They appear to think of themselves as something more than "merely tal-

ented" athletes. They think of themselves as special. Interestingly enough, recent research on those who excel in the business world suggests a similar pattern. Indeed, the bottom line to the literature on elite performers is that they are not only especially distinguished by motivation, they are especially defined by a sense of competence. (Incidentally, there is also preliminary evidence indicating that elite performers are characterized by different goals [Braskamp & Maehr, Note 1]. Specifically, they tend to operate more in terms of task and ego rather than social solidarity or extrinsic goals in their area of expertise. This complements the primary role that sense of competence appears to play in guiding their performance.)

The importance of a sense of competence has been a critical feature of my thinking about behavior for years (cf., for example, Haas & Maehr, 1965; Maehr, Mensing, & Nafzger, 1962). Our early research indicated that individuals tend to do what they feel competent to do (cf. Ludwig & Maehr, 1967). That conclusion has not been invalidated by subsequent research but has been shown to be simplistic. In particular, recent research on motivation and achievement has indicated that one's sense of competence will likely guide preferences and choices that have a major impact on the continuing development of talent and

TABLE 2. COMPONENTS OF SENSE OF SELF

| <i>Sense of competence</i>                                                                                                                                                                                                 | <i>Sense of autonomy/responsibility</i>                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| "I succeed in whatever I do."*                                                                                                                                                                                             | "I don't need anyone to motivate me; I motivate myself."      |
| "I can succeed at anything I want to do."                                                                                                                                                                                  | "I like to work on tasks for which I alone am responsible."   |
| <i>Reference groups</i>                                                                                                                                                                                                    | <i>Sense of mission</i>                                       |
| The critical feature here is the perceived characteristics of individuals the person believes to be important in his or her life. It is presumed that what these significant others value will modify his or her behavior. | Successful completion is the primary goal of any undertaking. |
|                                                                                                                                                                                                                            | "I aim my activities toward a future goal."                   |

\*The statements that reflect the perception of the designated component of self are taken from the *Inventory of Personal Investment* (Braskamp & Maehr, Note 1).

ability (cf. Kukla, 1978; Maehr, in press; Maehr & Willig, 1982; Nicholls, Note 5). Simply put, those who have a high sense of competence in a performance area are not only more likely to continue performing in that area, they are also more likely to initiate and maintain activities that enhance their ability. They will challenge their ability, test it, and thereby improve it. Those who are less sure of their competence need special encouragement from others if they are to confront the kind of challenge that is likely to be self-enhancing. It seems, then, that at an early stage of experience with an area of activity, persons develop a sense of competence that serves as inner direction toward the performance and practice of self-enhancing tasks. In one study (Fyans & Maehr, 1979), in which school-like performance was the issue, this pattern was already powerfully evident in the fourth grade. I suspect it may appear even before that time in many areas of activity.

#### ELITE PERFORMERS SHOULD NOT ESTABLISH THE NORM

Now I am going to remind you of the obvious: The elite performer is indeed different. To that I will add a corollary: What works for the elite may not necessarily work for all.

There is a tendency in music education to place elites and regulars on the same track, designing the system in such a way that most will inevitably fall by the wayside with only the cream of the crop surviving. Competitions, contests, and even recitals all seem to revolve around that end. In terms of personal investment theory, learning and performing tasks are characteristically designed to foster ego goals. They emphasize not only strong external evaluation but also social comparisons. The stress is on who is the best.

This is all fine for the elite. The problem comes for the merely interested and merely good. As noted earlier, the ego goal situation is known to create an avoidance pattern in those whose sense of competence is ambivalent at best, negative at worst. In music, as in any other domain, if the definition of success or the goal of performance is primarily one of determining who is the best among the competitors, most are doomed to failure and therefore also doomed to be turned off by the task. One does not create enduring motivational patterns by showing people that they are incompetent. Insofar as an activity is structured to do that, it will be a motivational failure for the large majority of the participants.

The theory of personal investment suggests that other less obvious options are available for most performance situations and a recent study makes clear that a range of options is available specifically for music. This study (Vispoel, Note 6) involved 2,014 9th and 12th graders from six Illinois high schools and was designed to determine the goals that high school students held for varied performance areas. Several findings are especially instructive for the present purposes. First, "success" and how one achieves it mean different things in different performance areas. There is a marked similarity between the aesthetic and the sports world. In both, students view success as something to be reached largely through individual ability and effort. The importance of success lies in the sense of individual mastery and in the recognition one thereby

attains. But unlike sports or school, providing a service is a major component of aesthetic activities. That particular finding may provide some comfort for music educators. But, overall, there is something rather troubling about these results. If recognition and admiration are indeed seen as the fruition of participation in the realm of the aesthetic, the arts do not easily become the property of the masses. Clearly, admiration can only go to a few. Moreover, the fact that "natural ability" is a primary cause of achieving success further reinforces the perceived elite status of the arts. If these perceptions are typical of high school students, it is not hard to see why music teachers regularly worry about lack of motivation or wider participation and support.

#### THE NORM SHOULD NOT CONSTRAIN THE ELITE

The focus of this paper has been on the masses and on what might be done to further their continuing interests in music. I suspect that all of us love music too deeply to allow it to become the exclusive property of an elite few. Certainly, most of us realize the practical necessity of continuing, committed, and informed participation in music on the part of the many. Reducing the role of ego goals in instructional settings promises to broaden participation. But what about the musical elite? Will their best interests also be served? Research in other areas of achievement suggest that if one is faced with optimizing motivation and achievement in the typical heterogeneously grouped instructional setting, the focus on task goals is clearly the way to go. Those who lack a sense of competence clearly exhibit their best, whereas elites seem to perform well under either task or ego goal conditions.

That is the general rule, but a troublesome thought persists. Perhaps experience with competition is a *sine qua non* for those who are on the track to being among the best. At what point competition should be experienced, and how, is an interesting question. Clearly, there are many casualties from such competitive wars. But it is difficult to ignore the fact that becoming an elite—in sports, science, or music—involves coping effectively with competitive situations. Moreover, such coping is not simply a matter of learning to be "cool under fire." It is also a matter of not being co-opted by competition. Living with competition is one thing; living for and by it is another. Competition almost always has its dark side (Ames, 1978, 1981; Ames, Ames, & Felker, 1977; Johnson, Maruyama, Johnson, & Nelson, 1980). The ideal, I submit, is to be able to handle competition as needed while focusing increasingly on the process of performing for its own sake and attaining one's own personal goals.

The point is, serious questions about the special needs of elites should not be ignored. But few people are or ever will be elites. Somehow, we have to keep the possibly contradictory needs of both elites and amateurs in mind. The enjoyment of amateurs should not be sacrificed at the altar of excellence. Indeed, it is only as we create a surviving mass of semicompetent but continually interested participants in the arts, science, athletics, or other domains that we can expect to support the elite, let alone retain any elite level of activity.

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# Directing Creativity: Marching with Different Drummers

STANLEY S. GRYSKIEWICZ

I will begin this speculative paper on the topic of creativity development and music education with three personal statements.

Statement One: My music background consists mostly of church choirs, where for the first (and last) time I realized that I was valued by others because of my voice. I also remember four wonderful choir directors from elementary school through college, and so have nostalgic and warm respect for those in music education.

Statement Two: My experience with regard to creativity has been in the area of problem solving in industry. My applied experience is full of blimps, tea bags, and box cars, not banjos, basses, or bassoons. It is within this context that I describe my work as applied creativity. When asked to participate in the symposium, I was at first a bit hesitant, knowing that my professional development had little obvious overlap with music education. However, I decided to frame this opportunity as a challenge to merge the disparate, and as an opportunity for the interchange of ideas on common, yet untrodden, ground.

Statement Three: The Center for Creative Leadership conducts an annual symposium entitled Creativity Week in which we bring together an international group from diverse backgrounds and experiences to talk about applied creativity and to provide a forum for additional novel associations to take place. Upon reading the descriptions sent me about this symposium, I realized that I was among friends with a common approach to professional development.

Judith Murphy's interpretive report of past Ann Arbor symposia offered summary themes based on the closing remarks of Wilbert McKeachie. I want to focus on one—the importance of individual differences—because it captures my research and speculations.

The importance of individual differences for understanding creativity has been established in the world of psychology through the work of Donald MacKinnon. MacKinnon was the Founder of the Institute for Personality Assessment and Research (IPAR), which studied differences and similarities among effective people. It was not too long before MacKinnon's group realized that one thing effective people had in common was individual creativity.

Harrison Gough, current director of IPAR at the University of California, Berkeley, suggested three popular themes for describing the creative person. One is that the creative person is mad. This traditional stereotype has been portrayed as an absent-minded professor, or by eccentric personality characteristics like those of Edgar Allen Poe and William Blake. Rarely referenced are the findings of IPAR that in large populations of creative scientists, architects, and engineers, the researchers found no relationship between psychopathology and creativity. In fact, there was a large number of instances of both physical and psychological good health among outstandingly creative people.

The second view had the creative person essentially disconnected from the act of creativity. With this view it is impossible to understand the creative act by observing the creative person. One must instead try to fathom the "mystical act" of creativity itself. Such a view begs for a more parsimonious explanation. The accompanying "creative" behaviors may be learned responses assumed appropriate in the presence of creativity.

The third view portrays creative expression as integral to the self-actualized person. Creativity is open to every person as an expression of a healthy personality. It may be highly developed in some, but it is present to some degree in everyone. From this perspective, compromise

becomes a virtue. On one hand, freedom from inhibition and mind sets is required. On the other hand, an awareness that a drastic innovation may overwhelm the personality or bring the person into an intolerable state of existence with other people is also necessary. One needs to know one's limits as well as when to push them.

This view describes our assumptions in the Creativity Development Program. We attempt to demystify creativity. In order to do this, we first establish the criteria that creative ideas are tangible and useful. Innovative ideas must fit the constraints of the real world in which our clients operate. With this in mind, we define creativity as "novel associations that are useful."

This applied framework has led us in the direction of working with industrial managers. Their efficiency orientation necessitates a more predictive model of creativity, one based on productivity needs and cost effectiveness. Such needs have traditionally been seen as antithetical to creativity. Creativity was seen as a luxury to indulge in only when one had the time and money. Besides, creative ideas tended to be too far-out in a world where predictability was highly esteemed. Productivity and cost effectiveness can be enhanced by supplying users with predictable product options. The possibility of focusing creative energy in a more predictable, targeted way seemed worth studying as a tool for applied creativity for innovation-hungry management settings.

At this point style of creativity became important. We were involved in a three-year study (1977-1980) to evaluate four creative problem-solving techniques using managerial populations in the United Kingdom and the United States. One of our dependent measures, product quality, sprang from the work of M. J. Kirton (1976, 1978) and we have pursued his construct as a heuristic device to better understand styles of creativity, some of which produce more radical change than others.

Kirton hypothesized a personality construct that described individual approaches to problem definition. Adaptive tendencies will challenge the original parameters and shift to another problem definition. Adaptors operate cognitively within the confines of the pattern in which a problem is initially perceived. Their creativity is less likely to challenge existing frameworks. Innovators, however, are more likely to treat patterns as part of the problem. The problem definition itself becomes the problem. The problem is redefined and results in a creativity style that goes outside the original definition. Both creativity styles are appropriate depending on environmental circumstances. Given this individual difference, adaptors and innovators have different problem perspectives. We have used the adaptive-innovative measure as an indicator of creativity style.

Construct validation of the Kirton Adaptation-Innovation Inventory (KAI) has been pursued by Kirton (1977) and efforts at the Center for Creative Leadership (Gryskiewicz, 1982). Four replications using four separate managerial populations suggest consistency and add support to the measure's validity. Although adaptors and innovators may often be at variance in their perceptions of the problem and therefore in their solutions, there should

be no characteristic differences in level of creativity of their solutions (Kirton, 1978).

It should be noted that both adaptors and innovators are capable of generating creative ideas or solutions. Neither the adaptive nor innovative mode, as measured by Kirton's inventory, correlates with creativity level measures. Furthermore, the KAI is independent of a traditional IQ measure and a measure of problem-solving ability with ambiguous data (Gryskiewicz, Note 1).

Kirton (1982) argued that the KAI measures style rather than level of creativity. Historically, creative problem-solving research has failed to make this distinction. The divergent-convergent thinking dimension, for instance, has associated the ability to produce a high quantity of ideas with an individual's level of creativity, rather than one's style (Gryskiewicz, 1980).

We hypothesized that the KAI continuum describes two styles of creativity. The adaptive type requires ideas that recognize environmental constraints and is aimed at doing things better. The focus of innovative creativity is testing the definition of the problem and stretching environmental constraints aimed at doing things differently. The former can be seen as the interpretive creativity of the orchestral conductor, whereas the latter reflects the thematic creativity of the composer.

#### **Missing key: Workable creativity**

Within management, this difference between level and style of creativity has also been muddled; however, managers have made the confusion on qualitative rather than quantitative grounds. Two definitions of creativity from managerial populations who have completed the KAI follow: An extreme adaptor described high creativity as "very original, imaginative, energetic, unique, unusual, adaptable, and artistic." An extreme innovator described high creativity as "open-minded, alert, sensitive to surroundings, willing to try new ideas, and willing to risk the unknown. A creative person frequently feels out of harmony with his or her environment. . . the most significant evidence of creativity is searching."

What is needed is an interpretation that recognizes the quantitative and qualitative differences in people's creativity, and casts these differences in the light of style rather than level. Kirton's theory offers people concerned with creativity just such an interpretation, which allows the practitioner to measure differences in style and helps people understand their own predisposition.

Our research and application within managerial populations in the United States has found value in this approach. The way in which managers define problems has implications for the solutions they produce. Kirton (1980) reported that these differences affect organizational development. He suggested that both adaptors and innovators are needed for organizations. Both styles of creativity are valuable to an organization, and our research suggests that an organization with the flexibility to use both approaches appropriately has an advantage. Some of the environmental contingencies that determine the relative appropriateness of each style are still being determined through our creativity development interventions.

The KAI offers for consideration an existing resource for an alternative structure for conceptualizing the application of the creative process. It suggests a break from a traditional level understanding of creativity to a more novel style difference. It may offer the key shift (set break) needed to assist in the restructuring for innovation needed in today's organizations.

My wish is that the background research presented here regarding an individual difference construct will provide music educators with a better understanding of style differences in their students. As with managers, I believe the tendency relates to problem-defining behavior and creativity style—marching with different drummers.

To illustrate, let me describe a scene for you. In a stone-age classroom, the teacher lectures his students on the correct method of hunting a deer, pointing to his cave drawing of the beast. All the little cave men are attentive except Ogg, who is off in his own world, busily carving what looks like a model airplane. The teacher notices Ogg's lack of attention and time-wasting behavior, and growls at him to rejoin the class and learn something that is really important.

Ogg's obvious ignoring of the framework, or problem definition of the day, may reflect a personal style tendency that can be used to reframe his learning experience. Do not be alarmed by some associated behaviors that traditionally have been labeled disruptive. What is irrelevant and disruptive in one setting may be routine and appropriate in another.

Expand your own style and the assignments you give to include both. There is value in each style. If you have Oggs in your classes, try different styles of teaching with those students. They may be bored with practicing and improving their scales, and may be more interested if given some problems in music theory. If they seem overwhelmed by the ambiguity of musical composition, give them some structure and ask for an arrangement. Kirton's construct suggests the importance of recognizing that there is no one best way to teach and that possibly "a repertoire of skills is needed" to meet style differences found within students.

Establish situations in which the adaptive style—accepting the problem definition and doing things better—is an appropriate framework in which to teach and experience music (ensemble performance). Also, determine situations in which the innovative style—redefining the problem and doing things differently—is also an appropriate framework in which to teach and experience music (improvisation). Both represent a style of creativity useful for implementing a music education experience sensitive to individual differences and most likely trainable for development purposes.

#### **Application: Back to basics for the teacher and the student**

The same dynamics for developing creativity within the student also apply to the teacher. Applications that provide the developmental experiences include personal growth through learning to use both styles. I have been intrigued by the findings of MacKinnon with regard to the childhood of the creative people assessed at IPAR. Let me focus on two. First, when growing up there were a variety

of effective role models available, and second, they experienced frequent family moves during early developmental stages. Both provide an opportunity to increase awareness that there is indeed no one best creativity style. It is hypothesized that both these structures throw the individual into a variety of situations, where they can observe a variety of effective role models and then internalize that there is no one best style of creativity just as there is no one best way to teach. What should be offered is variety to meet both the changing situations and the differences found within individuals.

A return to basics has recently been advocated in the management field. A recent awakening suggested by Hayes and Abernathy (1980), suggests management models that (1) reinforce analytic detachment rather than an understanding of the big picture that only comes from hands-on experience, and (2) short-term rather than long-term risk taking. The management models referred to were developed in the 1950s and 1960s and may not be appropriate for the 1980s. They argue that the specialist's brilliance in a narrow field does not overcome his or her naivete of the total organization. And the excessive attention to bottom line tips the scale toward a short-term framework, to the detriment of the long-term future of the organization.

Perhaps such thinking is also reflected in the opinions of taxpayers. Analytic detachment and short-term thinking has possibly resulted in school boards having to limit the curriculum budgets for music and other "extras." When dealing with boards, you may want to reconceptualize your approaches regarding teaching arrangements and finances—doing more with less.

Structure is one of the most important elements of music. Education is also highly structured. Yet creatively bending these structures is highly stressed in both of these fields. I encourage you to think about ways that you can bend the structures in which you work—in your teaching, your administrative work, and your personal development. And do it with style. Better yet, do it with a variety of styles. Learn to march to different drummers. Such flexibility will enhance your effectiveness and your growth.

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# Step-Path Theory and the Motivation for Achievement

JOEL O. RAYNOR

This paper addresses the specific questions put forward by music educators on the topic of motivation. It deals with as many issues as possible in the space allowed, using assessments, opinions, and speculations where current theory and research seem inadequate. Step-path theory of personality, motivation, and change (Raynor, 1982; Raynor & Entin, 1982) is used when a theoretical orientation is required. The assumptions and implications of this position were spelled out in an earlier, extended presentation for Session II of the Ann Arbor Symposium (Raynor, 1981). I have tried to include as much new material in this paper as possible while providing the background necessary for its understanding.

The fields of personality and motivation share a lack of agreement as to the "one best way" to view the determinants of human action. The behavioral problem of motivation concerns the initiation, direction, vigor, persistence, and cessation of activity; the change of activity; or movement along the steps of a life path over time. The theoretical problem of motivation concerns specification of the various determinants of action at a particular point in time or how these factors combine and change over time—often with the help of a mathematical model or equation. We can think of such an equation as indicating the various reasons for action and the ways these reasons combine to determine action. However, there is little agreement among psychologists as to the particular "reasons" to be included in such an equation. Some theories assume one basic or prime mover, such as the striving for anxiety or tension reduction, superiority, optimal stimulation or arousal, an understanding of the world, or cognitive balance or consistency. Other theories assume that several variables combine, such as drive and habit or expectancy and value. Still others assume a hierarchy of needs as

successive reasons for action, with higher order needs such as self-actualization becoming functional after lower order needs are satisfied. However, there is as yet no agreement as to "the" conception of human motivation that has both wide acceptance and substantial empirical support. Clinical theories tend to be put forward and accepted without sufficient scientific justification and usually lack enough precision for verification or disproof. Academic theories tend to be more limited in scope and more easily subject to test and disproof, but are applicable under ideal conditions that cannot be assured when viewing life behavior.

Despite its current lack of popularity in psychology, the general concept of individual differences in personality seems necessary to an adequate understanding of the problem of motivation, partly because different people act or react differently in the same situation. This complicates attempts to apply motivational concepts in a practical way, for we must know something about the person to know how a situation will affect him or her. The concept of motivation must also account for the observation that the same person will act or react differently in different situations. This also makes practical application of motivational concepts more difficult because we need to know something about task and situational properties before we can understand the specific reasons for the variability of a person's motivational arousal. A further source of variability stems from differences in the ways individuals define themselves, which determines what particular activities will be relevant to self-definition and hence will be perceived as important activity for positive self-esteem. These sources of variability lead to my emphasis on the person-situation-self interaction in what is termed a *psychological career*. But this kind of specificity works against attempts

to develop generalizations about people, situations, and self-identity, and may serve as an initial discouragement in attempts to apply motivational psychology to practical problems. Although this complexity is a rich source of research problems, it often dampens enthusiasm when searching for practical guides to foster involvement of all students for all kinds of musical experience. We must deal with the problem of motivation at its own level of complexity. In subsequent sections of this paper some of these complexities will become all-too-apparent to the reader.

My strategy for understanding human motivation has been to use as many variables as possible in a coherent and systematic approach so that the joint influence or functioning of these variables might account for the complexity of human behavior. This reflects the judgment that there are many different reasons for action, that important differences between persons must be taken into account, and that the specific situation has an important impact on behavior—but such understanding must not combine logically incompatible assumptions and implications. None of the basic or prime mover theories alone seems able to account for human motivation. I see motivational arousal as involving the interaction between person-situation-self in steps in a path over time, with individuals motivated to “find out” and to “feel good” as goals of action, with the most important goals related to finding out and feeling good about oneself.

Motivation can be viewed in terms of early, middle, and late stages of career striving along a series of steps in a path to a goal. Early-stage striving is dominated by trying to attain immediate success so as to insure progress toward some future goal that may define who the person is becoming and by concern about finding out what are, and how much is possessed of, the various attributes, abilities, and skills needed for future success. Late-stage striving is dominated by trying to maintain past successes and remain the kind of person one has become through past accomplishment and by concern about retaining those attributes, abilities, and skills that brought about past success. Middle-stage striving combines all three of these time-linked sources of motivation—concern about attaining future success, evaluating current requisite competences, and maintaining past accomplishments. This general view of stages of striving appears equally appropriate for different domains of learning and for specific musical behaviors, which may differ in the predominance of future, present, or past sources of motivation, as well as for whether open or closed path striving is possible. Open path striving does not involve a late or terminal stage, since new possibilities for action become part of the path as a function of earlier success. Recent research (Raynor & Entin, *in press*) suggests that chronological age is roughly correlated with stage of striving, with younger individuals more likely to be aroused to do well by important future events that define who they will become; older individuals are more likely to be aroused to do well by important past events that define who they have been. These results confirm the usefulness of the concept of stages of striving in understanding the arousal of achievement motivation. Psychological rather than chronological age appears

critical; however, concern about the future need not be restricted to the relatively young, nor concern with the past to the relatively old.

The concept of psychological career is used in conjunction with that of stages of striving. When a person's self-images are defined by the outcomes of activities along a path, the person is said to pursue a psychological career. As individuals mature, they develop the capacity for such self-definition in terms of the outcomes of action. Importance of doing well for feeling good about oneself is used to infer such a link between outcomes and self-evaluation. Recent research (Brown, 1982) investigated the psychological careers of women as parents at early, middle, and late stages of striving. It provided additional evidence, for the first time outside the traditional domain of achievement-oriented activity, in support of the relative contribution of future and past sources of value on time spent, positive affective reactions, and interest in evaluation of competences. When the substance of an individual's self-images are music related, we can expect a large increase in motivation for music-related activity compared to when music activity is not self-defining. This can be seen as a contemporary way of viewing what has previously been called “ego-involvement” in activity.

These research findings on motivation in psychological careers at different stages of striving, which have become available since Session II of the Ann Arbor Symposium, give me much greater confidence in recommending this view of motivation as one that is likely to aid understanding of motivation for achievement in music-related careers.

Intrinsic motivation has two components, one stemming from the particular kind of activity or task and one stemming from the perceived difficulty of task accomplishment when standards of good performance are inherent in the activity. Intrinsic motivation seems particularly potent in the field of music, because of both the apparently inherent interest aroused by musical sound, and the fact that reproduction of a musical manuscript involves the standard of playing the notes correctly. Extrinsic motivation arises from reasons for acting that become contingent upon task outcomes but are not inherently part of that action-outcome linkage. The function of extrinsic motivation is a matter of controversy. Some research (Deci, 1975) suggests that extrinsic incentives such as money or prizes decrease task motivation, whereas a great deal of other research indicates that such incentives enhance task motivation. The view that seems to make most sense at this time stems from the research of Kruglanski et al. (1975), which suggests that extrinsic incentives enhance task motivation when ordinarily associated with the task and anticipated as outcomes of task performance prior to involvement; however, they decrease task motivation when, in the person's view, they have been added after previous involvement in and enjoyment of the task and are not usually associated with such a task. The teacher can influence intrinsic motivation by choosing the tasks and materials for learning or performance that have been found to provide substantial inherent interest for the particular persons in question. The teacher can influence

extrinsic motivation by providing rewards or prizes that do not automatically result from engaging in the activity or from concern about doing well in the activity. The timing of presentation of extrinsic rewards may be critical. If prizes and rewards are to be used as positive extrinsic motivators, they should be anticipated prior to task performance and be a usual and ordinary reward for that kind of activity.

Suggestions as to additional ways a teacher can motivate a student will depend on the theory of motivation used as the guide. In my view, intrinsic motivation varies widely for different age groups and different kinds of activity. It is the teacher's responsibility to discover those musical activities that are of the highest intrinsic value for his or her students at a particular level, and then to use these activities as a vehicle for initial involvement at a high level of interest; this level of interest can then be put to use in teaching the more formal aspects of music. In fact, recent discussions with several middle school students suggest that they actively resent the imposition of the teacher's music preferences rather than use of their kind of music, particularly in chorus, so that they are turned off rather than turned on by the intrinsic value of the activity chosen. Whether this "should be" is beside the point. Positive intrinsic motivation, on the other hand, may be developed by parents by exposing their children early to particular kinds of music, although this is by no means a sure thing. As students grow older, the challenge of mastery can become an important source of positive motivation. I can contrast two rock groups of middle school students I am aware of: one gets together to jam every week, with the idea of having fun; the other is seriously concerned about getting better. One sounds terrible, the other very good, and the latter now entertains at various dances. One reaction to this discrepancy between performance was particularly interesting to me: the good group was described by members of the bad group as "too serious, always arguing about how things should be done," and "not having much fun." It is clear to me that abstract concepts such as intrinsic value and concern about doing well have direct applicability; the good group seems primarily motivated to do well, whereas the bad group just wants to have fun. I have little doubt from which group might emerge a professional musician, but I am not willing to suggest to members of the bad group that they get serious about improving, and risk turning them off. My guess is that the good group consists of strongly success-oriented individuals, whereas the other does not, and that each group has found its appropriate style. Instrumental or means-ends motivation can enhance intrinsic interest as the links between practice and performance—and between mastery and becoming a valued kind of person through music activity—are discovered. Appreciation of the value of music in its more formal aspects is much more difficult for younger people, particularly when intrinsic value is low, and may come only after a student has made a commitment to music as a serious area of study or as a professional career.

I see a specific link between intrinsic value, achievement motivation, and long-term career involvement. Intrinsic

motivation can lead to task involvement and then to the beginnings of a new competence. Perception of an increase in possession of competence—the emergence of a new ability—leads to a desire to use that competence to feel good, which leads to further increases in that skill. If continued for an extended period, the desire to do well and the desire to find out that one has increased competence supplant intrinsic motivation as the basis for continued task involvement. Eventually the desire to use that competence to feel good by doing well leads to more long-term planning in using the growing competence and to self-definition as a person who both is good in this area and is becoming a future kind of competent and successful person. This emergence of a psychological career based on initial intrinsic interest is more likely if there are strong needs to achieve and to find out about competences.

The fact that relatively few young people follow this route toward a psychological career involving music-related activity may be mediated by aptitude or talent, which are limiting factors in the growth of competence through involvement, but the role of a good teacher should not be underestimated. Understanding the development of students means identifying (1) initial involvement, (2) growing competence, (3) the intervention of skilled teachers, (4) the acceleration of the competence-involvement-do-well cycle, and (5) the identification of self in terms of long-term success in this area. Once the psychological career has emerged, the person has a built-in source of positive motivation for continued involvement that is relatively autonomous; the individual is now self-motivated. Since motivation to do well and to find out about competence may be relatively stable personality factors, teacher intervention to foster initial involvement through choice of tasks of high intrinsic value and emphasis on skill development once this involvement has insured that lessons will be used are the two places where teachers seem most able to influence development.

In my view the relationship between motivation and competition depends on the personality of the learner/competitor, the perceived difficulty of the task, the link between immediate striving and more long-term goals, and the nature of the competitive situation. Competition can involve standards of good performance inherent in the task, competition against others, or both. Research literature suggests that competition against standards defined by the task itself is more likely to lead to the emergence of long-term career involvement than competition against others. Extremely success-oriented individuals thrive on competition against standards inherent in task performance, seek out increasingly more difficult and complex challenges as they master easier ones (both to develop their competence and to feel good by doing well), and are further positively motivated when immediate success is linked to the attainment of long-term success. Failure-threatened individuals are most inhibited and turned off by these kinds of conditions. The majority of persons are between these extremes, and are more likely to be influenced by other considerations—such as extrinsic rewards and gaining the approval of peers and significant

others—than by task competition, long-term involvement, and the utilization of competence as self-definition.

On the other hand, interpersonal competition seems to involve additional factors that complicate this dynamic of motivational involvement and career development. In particular, I think that emphasis on interpersonal competition works to augment positive motivation only until the individual begins to lose consistently in such competition, at which time loss of interest in the task sets in. Although competition against task standards allows for control over the level of difficulty (through an ordered sequence of successive challenges) so that improvement can be assured, competition against others has no such control built in; competitors can insure continued failure regardless of how well the person is doing. It is important to prevent the loss of involvement that results from continued failure against others by selective exposure to competitors who are within the individual's range of competence.

One of the long-range goals of my recent research has been the development of assessment devices for classifying individuals as to their motive strength for different kinds of substantive activity, and I presume that such instruments can be adapted for music-related activity with little difficulty. We have used parenting and individual sports competition thus far as two kinds of activity. It appears that motivation to do well and motivation to find out about competence are distinct factors that combine to influence motivation for activity. Preliminary research findings suggest that positive motivation to both do well and find out about self-attributes involves a complex interaction involving four factors: individual differences in motivation to do well; individual differences in motivation to find out; whether the goal is to do well or find out; and whether immediate behavior is contingently linked to earning the opportunity to continue on to later tasks.

Unfortunately, there does not seem to be a simple prescription for predicting or understanding such competitive-diagnostic assessment behavior. For example, the development of a psychological career as described may only occur for individuals highly motivated to do well and to find out, and may only occur when both these goals are emphasized in situations in which there is a decreasing subjective probability path, so that more difficult challenges are anticipated after easier tasks are accomplished, and when immediate accomplishment is believed necessary for later task involvement. Another aspect of this research finding is worth emphasizing: The interaction of motivation to do well and to find out based on individual differences brought to the situation is relatively strong in producing effects independent of the kind of path or nature of the goal, so that manipulation of task and situational factors may be clearly limited in their effects by the personality of the competitor. This kind of specificity has consistently been found in research on achievement motivation (see, for example, Atkinson & Feather, 1966; Atkinson & Raynor, 1974, 1978; Raynor & Entin, 1982).

Performance anxiety results from a fear of doing poorly and is much stronger in some individuals (those who are failure-threatened) and when "important" performance is to be engaged in, whether that importance is related to

long-term future goals, past accomplishments, or an individual's self-definition. We see such anxiety as a symptom of behavioral resistance to action that is expected to result in failure, and it is often correlated with memory lapses, decrements in performance, and relief in removal from the performance situation. These effects should be stronger for solo than for group performance. However, performance excitement and improvement are enhanced by these same conditions for success-oriented individuals.

Noting the extreme individual differences in achievement motivation is crucial in determining whether performance excitement or performance anxiety will predominate for a particular person-situation-self interaction. Chronic performance anxiety that does not respond to increments in competence should be a clear warning against a solo performance career, and individual students who suffer such effects are best served by deemphasis on the competitive and importance aspects of performance. Put another way, the development of a psychological career may provide more resistance than excitation for the extremely anxiety-prone individual, and treating the activity as non-ego-involving may be the best strategy for overcoming such performance anxiety. Research findings are still unclear as to whether emphasis on finding out about ability rather than on doing well *per se* will overcome performance anxiety and its correlated decrements in performance. This is a future line of investigation that holds promise of providing a practical means of enhancing learner interest and involvement with a sequence of activities. It suggests shifting emphasis from doing well to finding out, but it is still too early to tell whether it will be successful in reducing the inhibitory effects of a predominant concern about doing poorly, which is the end result of the failure-threatened person's concern about doing well.

Students who develop psychological careers that are music related inevitably broaden their interests in music and continued learning. Without such long-term involvement and self-evaluation it is often difficult to sustain motivation for extended commitment. However, the majority of individuals cannot be realistically expected to have such life-relevant involvement in music any more than one would expect a majority to have such involvement in mathematics, psychology, or medicine. Competence discovery, long-term involvement, and self-definition seem to go together. Music will come to serve as the substantive focus for the lives of but a small proportion of individuals. Other school subjects, sports, and extra-curricular activities may become life relevant for various students, but the proportion of students in any one area will remain relatively small. This diversity of student as well as adult interests suggests that the emergence of extra involvement in music should be the signal for special attempts to augment competence, long-term involvement, and self-definition, but it also suggests that attempts to impose such involvement on an entire group of students may be misplaced.

Motivation to do one's best is partly a function of individual differences in personality and partly a function of

the proper arrangement of challenges. A success-oriented student can be challenged by more difficult tasks (but not too difficult) by relating immediate performance to increments in competence and long-term challenges, by providing feedback as to progress, and by providing role models and career opportunities. But not all learners respond to such challenges, and it seems a mistake to assume that doing one's best is or should be an important goal for everyone. The failure-threatened learner may respond best when doing one's best is deemphasized or ignored, and the link between competence, future striving, and self-definition is ambiguous, ignored, or actively deemphasized.

Teachers can maintain their own positive motivation by first recognizing that their best efforts will produce maximum effect for only a relatively small proportion of learners, that different strategies may produce maximum motivation in different students, and that the outstanding music student is a relatively rare individual whose personality, competence, and other interests provide the particular combination of ingredients that leads to emergence of a psychological career focused on music-related activity. The point applies for teachers of any subject, and its recognition allows for channeling of energies to those individuals for whom such special attention, concern, and commitment will most likely result in success. I do not mean to undermine attempts to do one's best in teaching the greatest number of students. I only wish to note that people are different, that strong positive motivation depends on a particular combination of factors, and that recognition of these limiting factors is as important as the desire to bring enrichment to all students through music education. Just as I no longer expect that every undergraduate psychology student will maximally excel at psychology, become a psychology major, and ultimately become a psychologist, so too I urge music educators to realize that not every student can be expected to maximize his or her potential through music-related activity. Such diversity is both to be expected and encouraged.

Another view of teacher motivation emphasizes the stage of striving at which they find themselves in their own career. Mastery of new skills, striving for long-term advancement, and self-definition as a music educator can be factors that sustain positive motivation of the teacher as well as the student. In particular, involvement in such activities as the Ann Arbor Symposium is an attempt to sustain an open rather than closed psychological career, just as building better theory and understanding based on newly emerging scientific findings is such an attempt in a career as a psychologist. The analysis of stages of striving along a career path and recent research findings suggest a paradoxical situation. On the one hand, movement toward important goals augments positive motivation for positively motivated individuals, based on anticipated attainment of long-sought outcomes, but such movement of necessity reduces the number of possibilities for future accomplishment if the important goal is seen as a final or fixed one. On the other hand, striving to attain a long sequence of successive goals where immediate accomplishment is necessary in order to continue positive

motivation produces anticipated time delays that can decrease positive motivation. Research findings (Pearlson, 1979, 1982) suggest that the solution is to set a series of successive goals arranged so that their accomplishment involves a relatively short period of time, at which time a new sequence of goals is instituted to turn the path from a closed to an open one. In other words, a positively motivated individual needs both long-term and short-term goals to maximize both time effects and task effects that function in opposition to each other in striving along a career path, and he or she needs new goals to supplant old ones as their accomplishment becomes a reality.

There seems to be a link between motivation and creativity at different stages of striving along a career path. Research findings concerning creative contributions over a life span and national survey data concerning motivation over a life span have yielded data indicating that middle-stage striving maximizes both creative contributions and achievement motivation (cf. Raynor & Entin, 1982, chap. 2). Although such a relationship must be viewed cautiously at this time, it suggests that positive motivation to do well or find out about competences in an area may be a cause of creative contributions. Although the particular sequence of anticipated challenges and whether the path is open or closed may modify this relationship, a tentative interpretation of this data suggests that creative contributions must be preceded by the augmentation of competence in an area and be coupled with a desire for long-term success. Additional findings of this research suggest that late-stage striving is more concerned with leadership contributions than creative contributions and is caused by the increased number of opportunities for exerting power and influence in an area in which one has become an expert or a recognized contributor. Such an analysis of motivational stages of striving suggests that early concern about doing well is supplanted by later concern about insuring that one's contributions are appreciated and taken seriously and about reaping the interpersonal rewards that such success tends to bring. My hunch is that such a decline in creative contributions and shifting to leadership contributions might be forestalled by continued open path striving and that such a decline is not necessarily inevitable, but is the result of closed path rather than open path striving.

The most difficult question to answer in any shorthand way concerns what it is about people that motivates them to perform, create, and appreciate music. The analysis I have pursued here suggests that many different factors function simultaneously, and they interact in a complex and not always obvious or intuitively discernible way.

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# Creativity and Talent

MICHAEL A. WALLACH

A great deal of effort on the part of those concerned with understanding and cultivating talent has been aimed at elaborating abstract theoretical constructs to illuminate the competences of interest. If misgivings were felt concerning a construct, the usual response was to switch one's allegiance to a different, but comparably abstract, construct. The reason for the misgivings was usually a growing realization that assessments deriving from a given construct failed to deliver much information about the real-life competences characteristic of one child or student but not another, or characteristic of them in various degrees—what their art work was like, whether they could play a musical instrument proficiently, whether they could deliver compelling portrayals in a dramatic production, how well they could write prose or poetry, whether they had a sense of what dance as an art form was all about, whether they could compose a piece of music. Yet it was such real-life competences as these that were of interest to us. We wanted to help the young develop their talents so that more individuals could fulfill more of their potential.

Fulfillment of potential is, after all, one of the goals of trying to reach a better understanding of talent (aside from our interest in the knowledge itself). This calls for the defining of criteria by which students will be selected for scarce educational opportunities and the providing of instruction. Some forms of human competence are more rare than others—not as many children learn to play the flute well as learn to read well, for example; not as many learn to compose music creditably as learn to play a good game of baseball. We are not, in fact, clear about the reasons for such differences in frequency, even though they may indicate more about what receives greater attention in our current society than something deeper about

the organism. As widespread a form of competence as literacy falls far short of being as widely distributed as one would wish, and there are far fewer yet capable of writing cogent prose, playing a musical instrument well, weaving handsome fabrics, composing a sonata or even a song, or painting pictures that give pleasure to the eye. Unfulfilled potential, in short, is a familiar story. Why have psychology and education not been more successful in improving this situation?

## The construct of intelligence

I think there is a straightforward reason why the success has not been greater. And it is a reason with clear implications for music education. In order to describe this, I will discuss some of the recent history of psychological work on the defining and nurturing of student talent.

There is a theoretical construct that we call "intelligence," and we infer a person's status with respect to it from his or her performances on various tasks (such as the ability to repeat the random sequence of digits just stated by an examiner or to name the capital of a certain country). We do not have a specific interest in the respondent's answering of these very questions. Rather, our interest resides in the clues these answers are presumed to offer as to that person's standing in regard to the abstract construct of intelligence, which we think of as sitting in the person's head and sending forth signs captured by the items of intelligence tests. And the reason we care about intelligence is that measuring the amount of it in a person's possession is supposed to inform us in an economical fashion about what that person potentially can accomplish in the world—how well he or she can generate prose, write poems, carry out art work, be an imaginative actor, do research, compose and perform music,

and so on. That is why you will find countless instances of classes for the "gifted" and "talented" for which membership eligibility is defined by cut-off scores on IQ tests. What has become clear as evidence has accumulated, however, is that the intelligence construct cannot deliver very well on this promise.

To be sure, there was some relationship between scores on conventional tests of intelligence or intellectual ability and meaningful attainments of the sorts mentioned. A child earning an IQ score of 70 would be quite different in terms of real-world competences from one with an IQ of 170. A high school senior scoring at the 95th percentile on the Scholastic Aptitude Test (SAT) would present a very different picture of competences from one scoring at the 20th percentile. But as soon as attempts were made to use these scores in a more fine-grained manner—looking at, say, an IQ of 100 versus one of 110, or an IQ of 125 versus one of 113, or an SAT score at the 95th percentile versus one at the 85th—it became difficult to support the claim that score differences were informative regarding the real-world competences of direct concern to us. Small score differences gave one little basis for predicting who would exhibit such competences and suggested little about how to teach these competences more effectively.

Extensive literature arose documenting that these kinds of score differentials on traditional measures of intellectual ability indicated little about which students would manifest talented accomplishments in the writing of poetry or prose, would carry out intriguing scientific experiments in an improvised basement laboratory, or other equally direct manifestations of competences that society has a stake in furthering among its members. The tests predicted grades in conventional courses, but neither the tests nor the grades predicted the talented accomplishments. In various sources, such as, for example, materials by Holland and Richards (1966, 1967), Richards, Holland, and Lutz (1966, 1967), M. A. Wallach and Wing (1969), Wing and Wallach (1971), Munday and Davis (1974), Albert (1975), and M. A. Wallach (1971, 1976a, 1976b), the details of this evidence are spelled out and evaluated.

These studies not only found that such test score differences indicate little about who would manifest talented attainments, but these attainments—once manifested—also were found to persist through time. Their presence in the behavior of some students at a given point gave a good basis for predicting which students would exhibit those competences in the future as well, extending on into the years of adulthood and professional activities. These talented achievements also turned out to be more specific than general. The student who was good in one area tended to keep on excelling in that domain rather than do well in another. For example, earlier manifestations of high competence as a creative writer tended to predict later achievement in creative writing but not in music or in science, earlier musical achievement predicted later achievement in music but not in science or in art, and so on. Such findings could, of course, arise simply because of the exigencies of time—doing one thing well limits the time available for something else. But these results also called attention to the great variety of competences at

issue and the many differences among them. The sources cited before again offer relevant documentation. This kind of predictability across time was, of course, useful to know about, since it helps indicate what should be offered educationally to which students and helps students decide what paths to pursue.

In striking contrast to the failure of the customary intellectual ability or aptitude tests to demonstrate their usefulness was the emphasis they received as sorting and selecting devices in education. If schooling in the early years is to nourish talent as directly as possible, we must concern ourselves with how students are selected for advancement in the later stages of the educational sequence; the criteria that govern college and university admissions and scholarship awards become the considerations that influence what the earlier stages of schooling will be like. We have already mentioned the use of IQ scores to determine eligibility for classes for the gifted and talented. As this practice suggests, selection and teaching from early in the educational sequence are oriented toward the kinds of criteria in effect later—namely, whatever controls access to institutions of higher education possessing greater prestige and hence credentials that are more in demand. It is instructive to consider, therefore, the nature of the criteria being used. Research has provided some clear information on this (see, for example, Wing & Wallach, 1971; M. A. Wallach, 1976a, 1976b).

Despite the degree to which scores on traditional intellectual tests are uninformative about real-life manifestations of competence or talent, such scores receive heavy emphasis in the college admissions process. Moreover, score differences on these tests carry great weight for admissions decisions even within that part of the range where their relationship to manifested talent is lowest—from the middle to the high end of the test score distribution. To find out whether alternative grounds in fact existed for making admissions decisions, a close look was taken at how much use is made in the actual admissions decision process of information systematically offered to the selection committee about candidates' talented accomplishments in such realms as creative writing, musical performance and composition, artistic creation, the conducting of innovative scientific projects, and excellence at directing or acting in dramatic productions. Also available, of course, were traditional test scores.

The actual admissions process turned out to rely very little on the information about real-life achievements. Furthermore, selecting a hypothetical class from the actual pool of candidates by giving weight to high-quality talented attainments of the kinds indicated led to a class quite different in its membership from the class actually selected. In other words, if one did pay attention to candidates' intrinsically meritorious talented attainments when making admissions decisions, the class admitted would contain a substantial proportion of different students from the class that actually gains admission under the customary procedures. A study by Willingham and Breland (1982) published by the College Board itself yielded similar conclusions.

What would happen if such changes in selection criteria

for the best opportunities in higher education were to be put into effect? These changes would tend to propel a group of individuals with somewhat different characteristics into leadership roles in the society—individuals with stronger talents in the sorts of real-life domains we have considered. That is to say, more people with the kinds of competences noted would be receiving the advantages conferred by prestigious educational credentials. This means that the activities at which they excel could well gain positions of greater value than now is the case; the effect could be a society in which the functions of the musical performer, musical composer, writer, poet, artist, sculptor, ceramist, weaver, dancer, playwright, and actor were looked upon with greater favor and given more support. The current selection procedures, with their test score emphasis, seem more oriented toward propelling bureaucratic types into positions of influence. After all, by now it seems clear that, within certain limits, scores on the usual entrance tests can even be enhanced by special preparation (Slack & Porter, 1980; Messick & Jungeblut, 1981). A society with such selection filters simply ends up with more good bureaucrats and technocrats and less artists and musicians defining its values than would otherwise be the case.

There would also be a direct impact on precollege education, for we would have a new set of forces influencing the content of the early stages of formal education. Such a result ought to interest music educators. If college and university admissions were made more dependent on demonstrating talented attainments in fields like music, art, or creative writing, primary and secondary education would become more concerned with teaching that would foster such competences in the child. A field like music education would be viewed as more central to the curriculum and less of a frill, for earlier stages in the educational sequence always will be pushed by parents and school authorities into emphasizing whatever will increase the child's further educational opportunities.

It could well be that bringing forms of achievement such as work in music and art into positions of greater curricular centrality—making them explicit goals of instruction from early on—would give more prominence to many kinds of students who stand relatively neglected now. My argument is that we simply do not know what may be possible along these lines, because little serious attempt has been made to find out—schooling has not really stressed such goals. Music, art, dramatics, and dance have largely been approached as “enrichment” subjects that do not matter the way higher scores on the SAT do. Until they matter in that way, such fields will remain educational stepchildren.

Some new momentum toward their mattering more may be developing, although the sources of resistance to such change are considerable. The good news is that Educational Testing Service, which carries out traditional testing programs like the SAT, has just begun a talent search program explicitly oriented to demonstrated competences in the fields of music, creative writing, theater, visual arts, and dance (Educational Testing Service, 1981). Quality evaluations by judges appropriate to the given

fields are made on the basis of work samples submitted by student applicants—color slides of paintings, poetry and prose, audiotapes of musical performances or videotapes of dancers and actors. Those whose work is viewed as most deserving receive help that includes the arranging of scholarship support with various colleges and universities and with other relevant programs. Such an approach to selection is, of course, consistent with the evidence we have reviewed. Talent or giftedness does not seem best selected for in terms of some abstract construct like intelligence, but in terms of demonstrated competence at the work of a given artistic field. The same point also holds in the sciences, where the best predictor once again seems to be demonstrated competence based on work samples, as in the case of extracurricular research projects that a high school student may carry out.

The bad news is that this kind of shift is resisted by educational institutions in the name of maintaining and improving “standards.” If change along these lines is to become a reality, perhaps the biggest obstacle to consider will be colleges and universities themselves, with their ideological commitment to construing tests like the SAT as somehow reflecting “real” intelligence in the common-sense meaning of the term. They will have to stop evaluating the “quality” of their students by computing the average of their SAT scores. They also will have to stop establishing their status in the institutional pecking order by comparing their students’ average SAT scores with the average SAT scores of students from other institutions. Both of these practices, of course, inevitably build pressure for selecting students with the highest test scores (M. A. Wallach, 1976a, 1976b).

### **The creativity alternative**

Faced with the growth of evidence questioning the real-life utility of traditional tests, many psychologists took the route of pursuing other possible—and equally abstract—constructs that might prove more fruitful than the construct of “intelligence” for making predictions about attainments in fields like art, music, writing, dramatics, or scientific experimentation. The term “creativity” has been widely used in connection with such conceptual alternatives. Although the nature of the constructs used to flesh out the psychological meaning of creativity has varied, one major direction of effort, perhaps the most frequently encountered, has sought to understand the term by reference to an individual's flow of ideas. Thus, the reaction to evidence that the intelligence construct was not delivering on its promise preserved the same logic of inquiry and switched to a different, but similarly abstract construct, such as “ideational flow”—the disposition to produce ideas fluently. Once again the strategy was to fashion presumptive tests of a person's standing with regard to the construct, and see whether scores on these new tests would relate better to real-world achievements than had scores on intelligence tests. If so, the nature of this new construct's measures was expected to offer clues of use to pedagogy.

It was not hard to find phenomenological warrant for a construct like ideational fluency. For example, there is

introspective evidence from undeniably creative practitioners in the arts and sciences that flow of ideas has been important in their creative efforts. Among the observations to this effect collected in a book edited by Ghiselin (1955) were Wolfgang Amadeus Mozart's referring to occasions on which the flow of his ideas was most abundant, John Dryden's referring to his poetry writing as involving the producing of thoughts that first emerged in a confused jumble, and Albert Einstein's referring to his work as calling upon the playful intermingling of diverse ideas or images. One could argue, however, that practitioners who were less talented could still produce an abundant ideational flow, so the case for greater ideational fluency in those with higher quality real-world accomplishments hardly could rest on introspective citations. Could research support it?

Such research began by seeing whether tests viewed as reflecting the ideational flow construct were tapping something different from conventional tests of intellective ability. Here are some examples of ideational fluency measures from work by M. A. Wallach and Kogan (1965) conducted with fifth graders: The child would be asked to name all the uses he or she could imagine for a particular object, such as a shoe or a cork. The child would be invited to suggest as many similarities as possible between two paired items, such as a train and a tractor, or a cat and a mouse. In another task, the child was to give as many instances as possible of a named category, such as things that move on wheels. Still other tasks offered various kinds of abstract visual materials, such as a triangle with three circles around it, with the child to indicate all the things this pattern might be.

M. A. Wallach and Kogan (1965) reasoned that two characteristics of a child's responses that might have the same aura of meaning as was conveyed by the kinds of introspective accounts by creative adults mentioned previously were the number of ideas the child would generate in responding to a task and their relative unusualness. Children were found to vary widely in both characteristics, but the characteristics themselves were strongly related: Children producing more ideas tended to be the same children who came up with ideas of greater uniqueness. What seemed to occur was that children who generated larger numbers of ideas were using up high-frequency ideas first and then reaching the more unusual ones.

Not only were ideational output and uniqueness of ideas correlated, but the individual who had more ideas, and more that were unusual, about, say, uses for a newspaper or a shoe, also was found to have a larger number of ideas, and more that were unique, when it came to saying what a given abstract design might be or indicating the possible similarities between a carrot and a potato. And, of most importance, these differences from child to child in flow of ideas were unrelated to the differences in their scores on conventional intelligence tests. Measures of output and uniqueness of ideas might be high, whereas the measure of intellective ability was low, or might be low even though tested intelligence was high, at least across the upper half or so of the intelligence scale. Numerous replications of this lack of relationship between ideational

fluency and intelligence have been reported: For samples of preschoolers, grade schoolers, high schoolers, and college students, measures of ideational flow, while related among themselves, had little relationship to intelligence among respondents varying from around the middle to the upper end of the intelligence score range (M. A. Wallach, 1970, 1971).

If measures of ideational flow thus had little in common with the usual measures of intelligence, perhaps ideational flow would provide a better basis than had intelligence tests for predicting real-life manifestations of talent. The next step, therefore, was to explore this possibility. Research by M. A. Wallach and Wing (1969), for example, found that intellective aptitude test scores failed to indicate the presence of talented accomplishments of various kinds during the high school years, whereas measures of ideational flow gave some indication about this. Across the range studied, higher intellective ability scores did not reveal which students, for instance, were more likely to have had art work exhibited or published, to have won an award in an art contest, or to have produced creative writing of sufficiently high quality for it to be published. On the other hand, higher ideational flow scores did so to a certain extent. Similar results for high school seniors in Israel—ideational fluency but not intelligence predicting talented real-life attainments—were reported by Milgram and Milgram (1976). Singer and Whiton (1971), in work with kindergarten-age children, analogously found level of ideational flow but not intelligence predicting the making of expressive drawings. Similar results were found by Wallbrown and Huelsman (1975) in the case of children's work with clay, although not their crayon drawings. But negative evidence has also been reported (see Kogan & Pankove, 1974; Jordan, 1975). And at best, the positive evidence was of limited strength.

Thus, a modicum of research support could be claimed for the introspective accounts by creative adults. Something about a more ready flow of ideas may be implicated to a degree in some kinds of talented achievements. Perhaps there is a more energetic cognitive motor generating information to be evaluated, as M. A. Wallach and Wing (1969) have hypothesized; or greater attention to peripheral cues, as M. A. Wallach (1970) has suggested; or a greater bent to toy with and savor the hypothetical, as M. A. Wallach (1967) has proposed; or use of a larger repertoire of templates offering possible ways of relating ideas, as elaborated by Crovitz (1970). Whatever it is, the outcome can be a marginally enhanced likelihood of showing one or another of various real-life attainments. But the gain in predictability is small.

#### **What focus for teaching?**

We have looked, then, at two trends of evidence about talented achievements. One is that scores on conventional intellective tests give much less basis for predicting such achievements than had typically been assumed. The other is that scores on tests of ideational fluency, while unrelated to intellective test scores, are slightly related to talented achievements. Keep in mind that what we care about is fostering the growth of these achievements them-

selves—of competence at music, art, dance, writing, or whatever. How have psychologists concerned with creativity typically tried to help with the task of bringing about such attainments?

A number of researchers, given that the construct of ideational productivity relates in some degree with real-world talented attainments, place their bets on that construct and try to raise the individual's scores on tests that presumably tap it. Since ideational fluency relates to talented achievements, we are justified in trying to teach people to become more ideationally fluent. The error here, however, is to assume that this relationship can be treated as if it were a linkage of perfect one-to-one correspondence, when actually the relationship at best is partial, limited, and marginal. Talented achievements are the result of a variety of factors, of which ideational fluency is but one. And responses to ideational fluency tests can be made for various reasons, of which something like cognitive motor energy level or the other possibilities alluded to may not be the most likely candidates.

What does it mean to give, in response to a tester's request, more uses for named objects, or more similarities between pairs of objects, or more instances of a given category, or more interpretations for an abstract visual configuration? To be sure, it may mean a cognitive motor of greater energy or an inclination to toy with the hypothetical. But it alternatively may mean something much more commonplace, like a greater desire to please the examiner and give what is wanted—or simple conformity to the tester's at least implicit suggestion about what to do. Such suggestibility or conformity hardly qualifies as a distinguishing characteristic of creativity. Obtaining a higher ideational fluency test score also may come from greater obsessiveness or hair-splitting—the compulsive listing of larger numbers of relatively similar responses. Once again, this hardly seems to be a distinguishing attribute of creativity (M. A. Wallach, 1971, 1976b). Does it make sense, then, to try to increase real-world talented attainments by enhancing a person's score on ideational fluency tests? Probably not, because scores on such tests can go up for any of various reasons besides their tenuous link to certain real-world achievements.

Yet many psychologists and educators interested in creativity see the pedagogical issue as one of teaching such characteristics as ideational fluency. In short, their aim is to raise scores on creativity tests. For example, Reese and Parnes (1970) gave students tests for assessing ideational flow before and after a course involving work with materials they had been told would teach them how to solve problems creatively. Compared to control subjects not given the course, ideational fluency tests scores went up a modest amount. The most parsimonious interpretation would seem to be not that the course had increased these students' competence at real-life pursuits, but that the rise in test scores had other causes. Thus, the students knew that taking the course was supposed to make them more creative and that they were expected to do better on the ideational fluency tests after the course than before. Since the tests asked for as many responses as possible, a desire to conform to what the teacher seemed to want is

sufficient to explain the results. This is a far cry from increasing the students' competence at a real-life form of talented achievement. Yet this approach is characteristic of study after study aimed at enhancing creativity. By now it is becoming clear that training that raises scores on creativity tests may tell us about responsiveness to the implicit demands of authority figures or about improved understanding of what kinds of test responses are valued by the teacher, but says little about how to teach someone to play a musical instrument, compose a fugue, do laboratory research, or paint a picture (Mansfield, Busse, & Krepelka, 1978).

The essence of the problem with the foregoing type of approach is the huge separation between the pedagogical concerns and the real goal one is after. One is trying to render a person more competent at work in art or music or science with training that centers on doing better at something far away from all that, a presumptive test of creativity. But scores on such tests can go up, if they do, for more than one reason. It is a poor bet to think they go up for a creativity-related reason when there are other reasons, located closer to the test-taking situation, that can account for the results. One can be trapped, in short, by a particular abstract construct, such as ideational fluency, into thinking that scores on presumptive measures of it are adequate proxies for the talented attainments themselves.

The implication seems clear. We should not be trying to teach creativity, but rather the technical masteries and stylistic sensitivities connected with the fields—from sculpture to composing, from dance to harpsichord playing—in which the kinds of achievements we view as reflecting creativity or talent can occur. What needs to be learned is close to the textures of particular fields of work, not removed from them in some abstract realm where creativity, as such, can be taught. Disciplines like the learning of a musical instrument, the craft of poetry writing, or the command over one's body involved in dance all primarily seem to involve matters that are field specific. There are huge conquests of technique that must take place in any of these domains, together with the cultivation of knowledge about styles and forms that lets a person come to understand and hear the difference between a more and a less sensitive rendering of, say, a Mozart piano sonata. From all this comes creativity. But what needs teaching are proficiencies and sensitivities specific to a particular discipline and requiring considerable immersion in it.

The major contribution from psychology to this endeavor is not methods for encouraging creativity; the creativity seems to come from having a field's techniques and styles sufficiently under one's belt that they function as tools and means rather than as obstacles and hurdles. Instead, what psychology validly contributes here is emphasis on the importance of teaching in ways that do not presuppose prior knowledge but in fact help the student acquire whatever needs to be learned. This is a concept that certainly is familiar to music educators. The teaching, in other words, should not be cryptic—intending to teach from scratch but in fact taking prerequisites for granted. Otherwise, we are restricting the number of

students able to learn and doing so in ways that inevitably favor home background factors, so that, for example, the form of the teaching communicates excellently to a child who comes from a family of musicians, but not so well to a child who starts out minimally acquainted with music. For illustrations of the application of this kind of point to instruction in beginning reading, see M. A. Wallach and L. Wallach (1976, 1979), and L. Wallach and M. A. Wallach (1982). What it implies for helping children become proficient at musical performance and composition seems especially pertinent for a society like ours in which there is so little active making of music carried out by the family in the home. Compare that with the "musical literacy" level of many European families a century ago!

An example of the importance of avoiding presuppositions in musical instruction is Sudnow's (1979) account of his learning of jazz piano improvisation. The graduated nature of the proficiencies to be acquired, the patient attempts at specifying different parts of the task that could be approached and mastered, strikingly contrast with the apparent effortlessness of the final expert performance. The problem from the student's point of view of pinning down an adequate explication of the steps needed for the learning is compellingly described by Sudnow as he shows time after time the crucial role of trying to get his teacher to unpack the complexities involved. Sudnow as student was a bulldog who would prod, push, and keep after his teacher until he could better see what was taken for granted in the teacher's presentation. This is hardly what happens in most instructional situations, where the student has no idea what to ask for—and anyway is too shy to try. The unpacking of complexities usually depends fully on the teacher.

The approach to instruction that is called for, then, is one that closely hovers around whatever form of competence is to be assessed and nourished, rather than rapidly ascending to abstract constructs like intelligence or ideational fluency. The place to start seems to be with a task analysis of the particular competence at issue—an attempt to specify what students really need to learn if they are to exhibit that form of competence.

In some ways this adds up to a request to music educators not to let psychologists lead them astray. After all, strong traditions exist concerning how to teach a given musical instrument and how to acquaint a student with the forms of musical composition, and these traditions are intended to supply, rather than presuppose, the needed prerequisites. But these traditions are not unequivocal or without controversy; and, as we saw with Sudnow's jazz teacher, much that should be taught may still be taken for granted. Psychological abstractions seem to give misleading directives both when it comes to selection of the gifted and talented and when it comes to instruction. Psychological knowledge has been emerging about these matters, but, to paraphrase the philosopher Susanne K. Langer, it is psychology in a new key. This new key emphasizes that what comprises talent and creativity is more specific than general, more tied to particular forms of demonstrated competences than conceptually removed from them. And it emphasizes the need to discern and

assure mastery of prerequisites if effective instruction is to take place in any given field.

Selecting the talented calls for considering manifested attainments in the real world, not scores on tests of intelligence, or, for that matter, on tests of creativity. It calls for information about particular accomplishments, whether of musical performance or composition, acting, dance, writing, or anything else. And instruction, in turn, calls for a close look at the structure of any full-blown form of competence, with an eye toward discovering its natural components—the lesser parts that must be mastered first if the student is to make progress at achieving that particular type of competence. Carrying out such an attempted decomposition of the mature competence into its parts and determining what parts are prerequisites to what others en route to mastery of the whole is the psychological enterprise that a good teacher undertakes. For a hallmark of appropriate instruction is supplying what needs to be learned, rather than taking it for granted. In music education, as in other domains, we ought to make this process as explicit and clear as we can, in order to help improve the quality of teaching, and increase the number of those who successfully learn. And we ought to select students who are to receive benefits for the talented, gifted, or creative, not on the basis of tests but of sampling actual accomplishments in relevant fields of work.

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# Children's Motivation to Study Music

JACQUELYNNE ECCLES (PARSONS)

Very little empirical work has been done on motivation and music; and of what has been done, little has been useful in developing musical educational programs. So, I decided to gather some new data on the topic for this presentation. I interviewed friends, colleagues, and their children about their experiences with music education. I also made use of a large-scale study of motivation to study mathematics that my colleagues and I have been doing over the past four years. We have gathered extensive quantitative and qualitative data. We have asked approximately 1,000 students why they are taking math, what they like about math, what they do not like about it, whether they plan to continue taking math, and why they will or will not continue. Based on these data and on our own theoretical orientation we developed a model of achievement motivation that outlined the set of variables influencing students' decisions to study or not to study mathematics. It soon became clear from my music interviews that this model also captured the critical mediators of motivation to study music. I will use this case material to illustrate the interaction among the variables at the level of the individual. In addition, because the motivational constructs are so similar across math and music, I will draw upon the classroom learning literature and discuss some of the means of optimizing children's motivation to study music.

To summarize, I will focus on two topics. First, I will present a model specifying the mediators of achievement choice and illustrate its applicability to music with case materials. Second, I will discuss the strategies for optimizing different student's motivations to study music.

In exploring children's attitudes toward achievement, one can't help but be struck with the variety of reasons children have for engaging in or avoiding various activ-

ities. For example, some of the children I talked to said they took music because they liked it, others because they thought it was "cool," others because their parents made them. The wide range of responses children have to seemingly similar achievement outcomes is also amazing. For example, some kids love to perform in front of an audience, others are terrified; some experience great pride and joy over a good performance, others worry about the little mistakes; some respond to a difficult piece with increased effort, others give up because the piece is too hard.

Finally, the range of behavioral choices the children make is also impressive. For example, even among children with similar backgrounds, one child decides to go out for the Little League team, another chooses to study piano, another prefers drums, and yet another prefers reading; one decides to become a doctor, another to become a plumber, another an airline stewardess, or an elementary school teacher, or a singer, or a concert violinist.

Why do children with fairly similar grades in school have different opinions of their intellectual abilities? For example, why do girls develop lower estimates of their math ability and lower math achievement expectancies than boys, even though they do just as well in math as boys do throughout their school career? Why do some children invest time and energy in developing social, physical, or musical skills?

These questions, and others like them, lie at the heart of achievement and self-perception theory. My colleagues and I have developed a theoretical model (see Figure 1; for a more detailed discussion, see Parsons, Meece, Adler, & Kaczala, in press) outlining the relations among what we consider to be the major variables influencing behavioral

choice and goals, and have tested that model with older adolescents in the academic achievement domain. This work has demonstrated the importance of self and task beliefs in mediating achievement behavior. In particular, we have found that perceptions of one's ability, expectations regarding probability of success, perceptions of task difficulty, and perceptions of task value are especially important determinants of achievement choices.

But before discussing each of these variables, I would like to make a few general comments about our model. Like most current cognitive theories, this model is built on the assumption that it is not reality itself (i.e., past successes or failures) that determines children's expectancies, values, and achievement behavior, but rather the interpretation of that reality. If children interpret their performance history differently from one another, then it is only reasonable that they will draw different conclusions regarding the meaning of those experiences. For example, if girls think success is due to effort and hard work and boys think success is due to ability, then it is quite logical that boys will rate their ability higher than girls even though both have had an equal number of successes.

The model further proposes that interpretation of achievement outcomes and future goals is mediated by variables such as causal attributional patterns for success and failure, the attitudes of parents and teachers, children's perceptions of their own needs, values, and role identity, and children's perceptions of the characteristics of various activities. Each of these factors plays a role in determining the expectancy and value associated with any particular task, and these in turn influence a whole range of achievement-related behaviors potentially associated with that task, such as choice of the activity, intensity of the effort expended, and performance level.

The model assumes that decisions regarding various activities are made in the context of a variety of choices and are guided by core values, such as achievement needs, competency needs, and sex-role values, and by more utilitarian values such as the importance of the various alternatives for the child's immediate and long-range goals. Thus, if a child feels that the amount of effort it will take to do well on any particular activity such as music lessons is not worthwhile because it decreases the time available for preferred activities, such as socializing with friends, then the child may well avoid engaging in the activity at all. Or, if a girl stereotypes drum playing as masculine and not in line with her own sex-role values, then she will be less likely to take drum lessons than if she stereotypes drum playing as feminine. Alternatively, a child who thinks being a guitar player is a "cool" activity that will make him a hit with his friends will place a very high value on mastering the guitar and will be motivated to practice. Finally, a child who thinks she has more talent for gymnastics than for piano will be less motivated to practice piano than a child who is sure she is a better musician than an athlete.

What distinguishes this model from other models of achievement behavior is attention to the issue of choice. Consciously or not, children (and adults) make choices

among a variety of activities all of the time. For example, they decide whether to work hard at school or just get by; which musical skills to develop or whether to develop any at all; how much time to spend practicing music; and whether to practice or play with their friends. We have tried to address this issue of choice directly and to develop a model that allows us to predict the type of choices being made. Furthermore, we have tried to specify the kinds of socialization experiences that shape individual differences on the proposed mediators of these choices, especially in academic achievement.

Having made these general comments I will return to the major components of our model. Building on a long heritage of work in achievement motivation, we have postulated that achievement choice is influenced most directly by two major cognitive constructs: expectations regarding the probability of success and perceived importance or incentive value of the activity. Each of these, in turn, is influenced by many variables.

### **Expectation for success**

The concept of expectancy or probability of success has long been recognized by decision and achievement theorists as an important variable in determining behavioral choice (Atkinson, 1964; Edwards, 1954; Lewin, 1938). Numerous studies have demonstrated the importance of expectancies for a variety of achievement behaviors, including academic performance, task persistence, and task choice (e.g., Covington & Omelich, 1979b; Crandall, 1969; Diggory, 1966; Feather, 1966; Veroff, 1969). Developmental studies have indicated that the influence of expectancy on performance increases with age and may emerge earlier and more strongly for males than females (Crandall, 1969; Parsons & Ruble, 1977; Stein, 1971). By adolescence, however, expectancies are clearly related to both general achievement performance (cf. Stein & Bailey, 1973) and math achievement and course enrollment in particular (Battle, 1966; Fennema & Sherman, 1978; Sherman & Fennema, 1977). Not surprisingly, these studies have shown that students are more likely to enroll in advanced mathematics courses when they are confident of their performance.

Because achievement expectancies play a significant role in students' academic choices, it is important to identify the factors shaping these expectancies. We propose that expectancies are influenced most directly by self-concept of ability and estimates of task difficulty. Historical events, past experiences of success and failure, and cultural factors are proposed to have indirect effects that are mediated through the individual's interpretations of these past events, perceptions of the expectancies of others, and identification with the goals and values of existing cultural role structures. I will discuss each of these influences briefly.

### **SELF-CONCEPT OF ABILITY**

The importance of individuals' conceptions of their ability for their achievement behaviors has been discussed

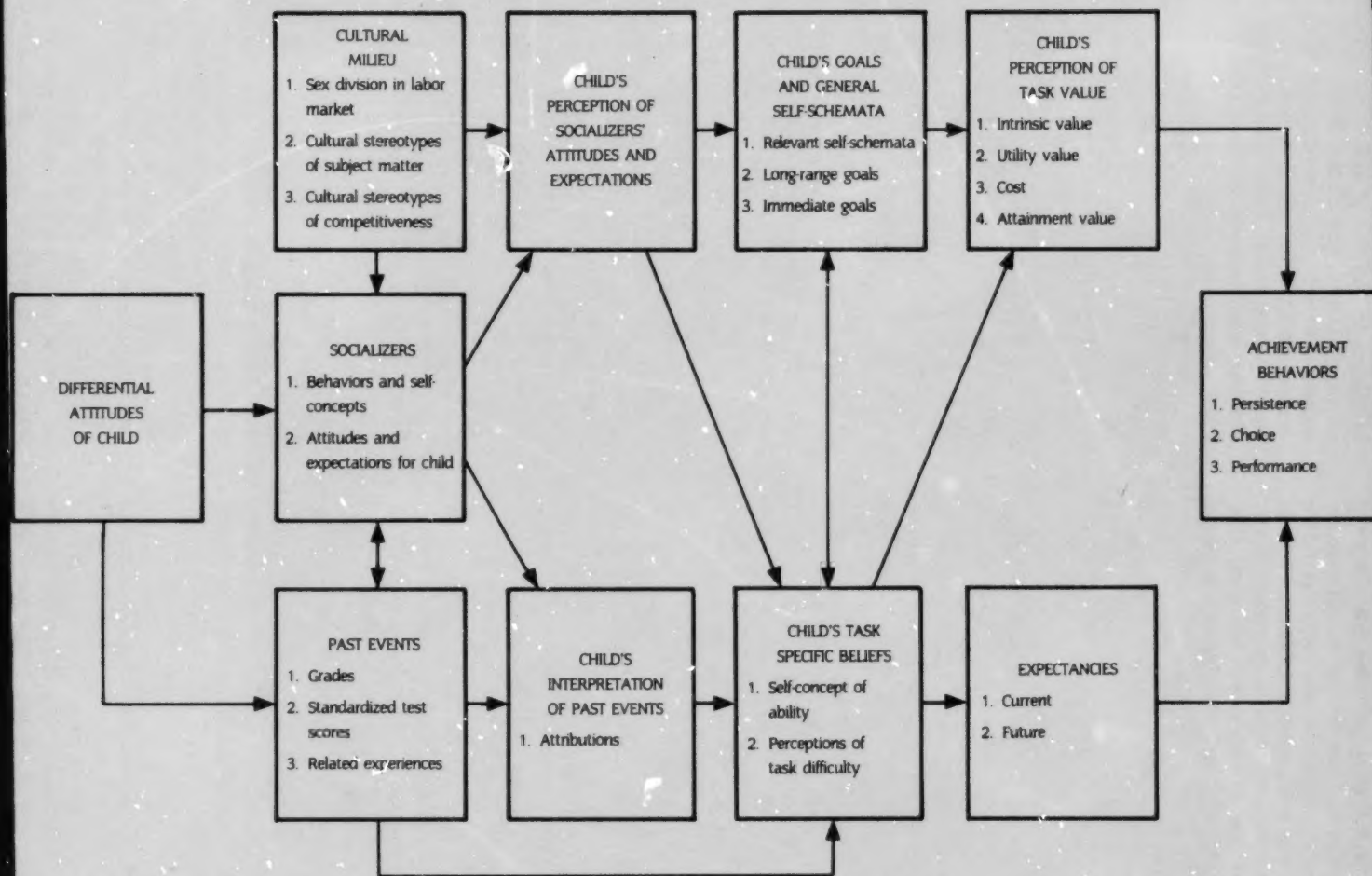


Figure 1. General model of academic choice.

(Adapted from Parsons, Adler, et al., in press)

Ly several researchers (e.g., Brookover & Erickson, 1975; Covington & Beery, 1976; Covington & Omelich, 1979a, 1979b; Kukla, 1972, 1978; Meyer, Folkes, & Weiner, 1976; Nicholls, 1976; Purkey, 1970). Formed through a process of observing and interpreting one's own behaviors and the behaviors of others, self-concepts of ability are defined as assessments of one's own competency to perform specific tasks or carry out role-appropriate behaviors. Most authors view self-concepts of ability as key causal determinants of a variety of achievement behaviors.

Research assessing this view has, however, yielded mixed results. Although several studies have demonstrated that those with higher estimates of their ability to master a task in fact do better on the task, few studies have actually tested the causal direction of the relations. In a recent field study, Calsyn and Kenny (1977) found that academic achievement determines self-concept of ability rather than the reverse. In contrast, intervention procedures designed to raise children's confidence in their abilities in particular subject areas have been shown to induce gains in the children's subsequent achievement behaviors (e.g., deCharms, 1976; Dweck, 1975). These intervention studies suggested that for some children, at least, increases in self-confidence can produce increases in achievement.

Research specific to math achievement has yielded a consistent and positive relation between perception of mathematical ability and plans to enroll in advanced mathematics courses. For example, we have found that students' ratings of their mathematical ability predicted the amount of math they planned to take in high school (Parsons, Adler et al., in press).

It is reasonable to suspect that a similar effect would hold for music. Children or adults who are confident of their musical ability should be more motivated to study music. Intra-individual comparisons should yield even a stronger pattern. We know that children are pretty good at estimating their ability level in academic subjects by third grade. They may also have a fairly accurate sense of their musical talent by that age. If so, the 8- and 9-year-old children should be able to assess their relative abilities across several domains, including music. Our math data suggest that children who see musical ability as one of their strengths and math as one of their weaknesses will be more intrinsically motivated to study music than to study math, and vice versa. One of the people I interviewed specifically mentioned relative strength in music as one of the major influences on his decision to attend a performing arts high school rather than an academically oriented high school.

#### ATTRIBUTIONS

Beliefs regarding both the causes of success and failure and the nature of ability and talent are another set of important influences on expectations. Attribution theorists have explored the impact of these beliefs on expectancies for future success and individuals' perceptions of both their own abilities and the difficulty of the various tasks (Frieze, Fisher, Hanusa, McHugh, & Valle, 1978; Heider, 1958; Weiner, 1974). According to these theorists, it is not success or failure per se, but the causal attributions made

for these outcomes that influence future expectancies. For example, if people attribute success to a stable factor such as ability, then they should expect continued success. If, on the other hand, they attribute their successes to an unstable factor such as effort or good luck, they should be uncertain about future outcomes. Similarly, attributing failure to stable factors should produce expectations of continued failure, whereas attributing failure to unstable factors should not. Consequently, individuals who attribute their successes to unstable factors such as task ease and their failures to stable factors such as lack of ability should have lower expectancies than individuals exhibiting the reverse, even if their performance histories have been identical.

Several studies have provided indirect support for this general hypothesis (e.g., Dweck, 1975; Dweck & Reppucci, 1973). Furthermore, extending the argument originally advanced by Weiner et al. (1974) into a developmental time frame, we hypothesize that attributions, particularly attributions to ability, also play a critical role in the formation of self-concept of ability. We have found that the attributions of success and failure to one's math ability have a direct effect on both self-concept of math ability and expectations. Individuals who attribute their success to high ability developed greater confidence in their math ability. Similarly, people who do not attribute their failures to lack of ability also developed greater confidence in their math ability.

An interesting sex difference has emerged in studies of math attributions (e.g., Wolleat, Pedro, Becker, & Fennema, 1980; Parsons, Adler et al., in press; Parsons, Meece, et al., in press) which has some intriguing implications for motivations. Girls rank skill, diligence, and effort as more important causes of math success than do boys and are less likely to continue studying math. It is possible that attributions of success to high effort rather than ability can also have an adverse affect on students' motivation to continue studying music. For example, students who view consistent effort (or skill and knowledge generally acquired through consistent effort) as the major determinant of their current success and who are not confident of their musical talent may be discouraged about the level of effort they think will be necessary for continued success. The amount of effort students can or are willing to expend has limits, and if students already think they are working very hard to do well in music they may conclude that their performance will not continue to improve without additional efforts and that the amount of effort necessary to continue performing well is just not worth it.

A person I interviewed typified this dilemma. He had taken up music at age 10 because he admired a friend who played the trumpet well. He began lessons with great confidence in his ability but found the going more difficult than he had expected. But desiring to master the instrument, he increased his practice time and did improve. He continued to practice and to attribute his improvement to practice. He reached what several individuals referred to as the plateau in performance level. Rate of improvement slowed; he assessed his ability level and decided that the amount of effort necessary to continue improving was just not worth it to him. He quit.

#### STEREOTYPES OF ABILITY

This example points up the importance of a related set of issues that have important motivational implications: how people stereotype the nature of ability or talent, how they assess their talents or level of music ability, and to what extent they think that music competence is limited by talent or natural ability. I have already pointed out the importance of self-concept of ability and suggested that attributions may play an important role in shaping self-concept of ability. If individuals assume that music competence is limited by natural talent (that is, that they can only progress to a certain level of competence), then their motivation to continue practicing may be influenced by their estimate of ability level, at least to the extent that practicing is motivated by the desire to improve competence level.

One piece of information individuals may use in assessing their level of talent is how much effort they think they have to put out in order to improve their skills. If they think they have to put out more effort than others, or more effort to master music than they have to put out mastering some other skill, then they may conclude that they have relatively less musical talent, that continued improvement will take a lot of effort, and that they would be better off investing their time in some other activity. Unfortunately, estimates of effort are very subjective and are often based on incorrect information, especially with regard to other people's efforts. Good performers make music look easy. Consequently, novices or beginners may be biased to conclude that it takes relatively little effort to learn music. They may be easily discouraged as they discover how much time it takes to learn to play an instrument and may conclude too soon that they have limited musical talent. More accurate information regarding the difficulty of the task and the amount of effort needed to master an instrument might help inoculate novices against this effect.

Here is one other example of the impact of stereotypes. When I was 5 years old my parents started me in piano lessons. After 6 weeks of lessons, the piano teacher told my parents to stop wasting money because I would never be any good. She based this conclusion on the fact that I learned the pieces she gave me by memorizing her hand movements rather than by learning to read the printed music. She felt if I wasn't going to learn to read music I could never be any good at the piano. This belief reflects a stereotype of what constitutes "appropriate" music learning. We all hold such stereotypes, influencing the way we interpret our own and other people's musical experiences. These interpretations, in turn, influence our own motivation and the messages we convey to others about their performance potential.

The achievement literature documents the importance of parents' and teachers' expectations and attitudes in shaping children's self-concepts and general expectancies of success (Brookover & Erickson, 1975; Brophy & Good, 1974; Parsons, Frieze, & Ruble, 1976; Rosenthal & Jacobson, 1968; Webster & Sobicozek, 1974). Studies investigating this relationship have yielded consistent results. Children for whom teachers and parents have high expectations have high expectations for themselves and in

fact do better in their course work. There is no reason to suspect the same is not true in music instruction. Therefore in our roles as teachers and parents, the stereotypes we have about the nature of musical talent, the major determinants of the growth of musical skill, and the causal attributions we make for our children's performance can have an especially important impact on the children's motivation to study and practice music.

#### Subjective task value

The second cluster of variables my colleagues have found to be major mediators of achievement behavior is linked to the individual's assessment of the value or importance of the activity. Research on academic achievement has identified students' perceptions of the usefulness of a subject as an important determinant of students' enrollment decisions. Building on this research and the work of other achievement theorists, our model proposes that the value or importance of engaging in a specific achievement task is determined both by the characteristics of the task and by the needs, goals, and values of the person. The degree to which the task is able to fulfill needs, to facilitate reaching goals, or to affirm personal values determines the value a person attaches to engaging in that task.

The broader domain of value can be divided into three components: attainment value, intrinsic value or interest, and utility value. Attainment value can be defined as the importance of doing well in a task. In its broader form, this component can include a variety of dimensions, including perceptions of the task's ability to confirm salient and valued characteristics of the self (e.g., masculinity, femininity, competence), to provide a challenge, and to offer a forum for fulfilling achievement, power, and social needs. We assume that the perceived qualities of the task interact with an individual's needs and self-perceptions in determining a task's attainment value. Consider, for example, a child who thinks of him- or herself as talented and thinks that competence at a musical instrument is one characteristic of talented people. He or she would undoubtedly place great value on music lessons, since taking music lessons and doing well would affirm a critical component of his or her self-concept.

Intrinsic or interest value, the second component of task value, is the inherent enjoyment one gets from engaging in an activity. Some people just enjoy playing an instrument. They gain great satisfaction from mastering a new piece or a new instrument. They find music calming or aesthetically pleasing. For such people the value of the music and related activities should be very high. Unlike mathematics, there are very few people who don't enjoy and get intrinsic satisfaction from some aspect of music. To the extent that music teachers can identify the source of an individual's intrinsic interest in music and incorporate it into the instructional plan for that individual, the teachers will undoubtedly increase the individual's intrinsic motivation. And with increased intrinsic motivation come increases in both commitment to practice and involvement with the process of learning music. Several of the people I talked with specifically mentioned a teacher who had built on their interest in music rather than imposing his or her

goals and tastes on them. It really doesn't take much to use this strategy. Simply giving students some choice over the pieces they will be learning may be enough in some cases.

Utility value is the third component. Tasks can have value quite apart from any feeling of interest or enjoyment. For example, imagine a junior high school student who wants to play in the high school marching band. In preparation for this goal he or she will need to learn to play some instrument. The student knows that there are never enough tuba players for the band. Consequently, her or she may decide to take up tuba playing even though it is not his or her favorite instrument. In this case, the desirability of the goal and the potential role of tuba playing in helping achieve that goal outweigh an otherwise neutral attitude toward tubas. The value of tuba playing is increased because it is perceived as useful in reaching an important goal. Utility value is the value attached to an activity because it helps meet a related goal. It is influenced most by salient long-range goals such as education plans, career aspirations, and other social goals.

In sum, we are proposing that task value is a function of both perceived qualities of the task and the individual's needs, goals, and self-perceptions. Individual differences on these factors are created by the experiences individuals have had with similar tasks in the past, by social stereotypes (e.g., blacks have rhythm), by the kinds of information provided by parents, teachers, or peers about the importance of or difficulty involved in doing well. We have been most interested in three particular influences on perceived task value: sex-role stereotypes, cost of success and failure, and previous or anticipated affective experiences.

#### SEX-ROLE STEREOTYPES

A sizable portion of the literature related to the processes of socialization suggests that a variety of needs and values influence achievement behavior (Mortimer & Simmons, 1978; Parsons & Goff, 1980; Spennner & Featherman, 1978; Stein & Bailey, 1973; Veroff, 1969, 1977). For example, Parsons and Goff argued that individuals develop an image of who and what they are as they grow up. This image is made up of many components, including (a) conceptions of one's personality, (b) long-range goals and plans related to anticipated adult roles, (c) schema regarding the proper roles of mothers and fathers, (d) instrumental and terminal values, (e) motivational sets, and (f) social scripts regarding proper behavior in a variety of situations.

Some parts of an individual's image are central or critical to his or her self-definition. According to Markus (1980), these are the parts of one's self-image that exert the most influence on behavior. For example, if being a good dancer is central to an individual's self-image, then it is to be expected that this individual will work at continuing to be a good dancer and at projecting an image to others of being a good dancer. The degree of influence wielded by the values and needs is determined by their centrality to an individual's self-definition. Specifically, personal needs and values operate in ways that reduce the probability of

engaging in roles or activities perceived as being inconsistent with one's central values and increase the probability of engaging in roles or activities perceived as being consistent with one's definition of self.

The impact of sex role on behavior is a good example of this process. Like mathematics and many other achievement activities, females are underrepresented in the music profession. In addition, as with medicine and teaching, males and females tend to be drawn to different areas within the field of music. Females are more represented among singers and dancers than among instrumentalists, and even among instrumentalists, females are more likely to play violins and pianos than percussion instruments. Why is this true?

My colleagues and I (see Parsons, Adler et al., in press) have suggested that sex roles influence behavior primarily through their impact on perceived task value. The extent to which tasks are either compatible or incompatible with one's sex-role definition will influence the subjective value and attractiveness of the tasks for the individual. For example, if a girl thinks that playing bass violins or drums is unfeminine then it is unlikely she will choose to learn to play bass violin. One of the women I talked to gave just such a reason for her reluctance to take up bass violin despite her mother's urging. By the way, she did succeed in dissuading her mother and took up the clarinet instead.

#### COST OF PARTICIPATION

A second variable that will influence the value of engaging in an activity is the perceived cost of participation. Estimates of the amount of effort necessary to succeed are one of the variables that influence perceived cost. Let us assume that individuals have a sense of how much effort is worthwhile for various activities. It then seems likely that, as the anticipated amount of effort increases in relation to the amount of effort considered worthwhile, the value of the task to the individual will decrease. The earlier example of the boy who quit music lessons once he doubted the worth of continued effort illustrates this point.

Closely related conceptually to the cost in effort is the cost in time lost from other valued activities. Students have limited time and energy. If they spend one hour on task A, they have one hour less available for task B. They must make choices between various activities. For example, imagine a girl who likes piano, knows it's hard and knows that practice is important, but also wants a boyfriend. If she wants to perform as well in music as she feels she should, she knows she'll have to practice every day. She also believes that she can optimize her chance of getting a boyfriend by staying after school to watch the boy of her dreams play basketball. Her parents, however, will not allow her to watch basketball practice unless she has practiced the piano. Despite its high incentive value, music poses an obstacle to success in her social goal. Consequently, the value of success at piano for this girl will be decreased by its high cost in terms of the satisfaction of another important goal.

This analysis highlights the necessity of thinking about various achievement-related behaviors within the broad

social array of behavioral options available to people. Decisions to, for example, try hard at piano or strive to become a professional dancer are not made in isolation. We should not underestimate the importance of conflicting goals.

#### PREVIOUS AND ANTICIPATED AFFECTIVE EXPERIENCES

Motivation is also influenced by both previous and anticipated affective experiences. Achievement activities elicit a wide range of emotional responses. Past affect-laden experiences can influence one's responses to similar tasks in the present or future. For example, if one has had bad experiences with a music teacher in the past, one may be less positive in general toward music and music teachers. To understand the value of various achievement activities, then, it is important to consider variations in the affective experiences children have had with different achievement activities.

Past successes and failures themselves have been shown to elicit characteristic affective responses (e.g., Weiner, Russell, & Lerman, 1978); success, especially at challenging tasks, leads to positive feelings, and failure, especially at easy tasks, leads to negative feelings (Harter, 1980; Ruble, Parsons, & Ross, 1976). Other things being equal, these affective responses should influence the enjoyment or intrinsic value of subsequent related activities (Bandura, 1977). One should like activities that have been associated with positive feelings in the past more than activities that have been associated with negative feelings.

Both affect-laden behaviors of teachers and parents (e.g., praise, criticism, public ostracism, rejection) and more general experiences (e.g., test-taking procedures, performance recitals, curriculum variations) can have effects similar to those of past successes and failures. These effects will vary across different individuals, especially when they result from negative experiences.

There has been a long tradition in the achievement literature of concern with the effects of negative affective states on achievement-related behaviors, beginning with Atkinson's inclusion of a motive to avoid failure in his original model of need achievement (Atkinson, 1964) and related work on test anxiety (e.g., Sarason, 1972), and extending to more recent work on mastery orientation versus learned helplessness by Harter (1980) and Diener and Dweck (1978). The research has indicated that children classified as either high test anxious or learned helpless are more likely to label a given outcome as failure (Diener & Dweck, 1978), to blame themselves for their "failures" (Diener & Dweck, 1978; Doris & Sarason, 1955), to experience more negative affect in general in testing situations that include both successes and failures (Mandler & Sarason, 1952; Diener & Dweck, 1978), to suffer greater losses in their self-esteem when confronted with evaluative situations (Wine, 1971; Diener & Dweck, 1978), to gain less in their self-evaluation from success (Diener & Dweck, 1978), and to exhibit a range of debilitating behaviors reflecting anxiety in evaluative settings (e.g., Ruble & Boggiano, 1980; Diener & Dweck, 1978). This set of characteristics certainly would lead one to conclude

that evaluative situations are particularly painful for some students.

For these students we could expect experiences like competitive, public recitals to have a relatively high risk of producing negative affect. For other students—the confident mastery-oriented students—competitive, public recitals will be just the thing to inspire increased motivation. Music teachers need to assess their students' orientation and to try to structure positive experiences for each student. These will not be the same for all students. But therein lies the challenge to music educators.

Where does all of this leave us? My goal was to point out the multitude of factors that might impinge on children's motivation to study music. There are many types of students. At one extreme, you have those gems that every music teacher dreams of—the students who love their instrument and are intrinsically motivated to work hard at mastering it. I found one such individual, a man who loved the violin so much that he continued to practice secretly after his parents stopped his lessons and tried to stop his playing because it was a "foolish waste of time" that would never "put food on the table." At the other extreme, you find those equally rare individuals who hate music. But in between is a vast group of children who take music for a variety of reasons and who are more or less interested in practicing, if it is neither too hard nor too boring. These children must be treated as individuals. The music teacher needs to assess each one's motivation and goals, and to adapt the teaching strategy accordingly.

The key to effective music teaching lies, as I said earlier, in designing a program for each child that takes advantage of his or her goals, interests, and self-perceptions. The fact that behavior and motivation are affected by so many variables is the trump card of a creative teacher. It provides the teacher with multiple access points for stimulating children's motivation to learn and study music.

To be more specific, the first thing to consider is the extreme importance of social interaction to children. Children want to be with other children, they want to play with their friends. Except for the rare, highly motivated child, most children would rather play with their friends than practice music alone. So why not teach them in groups and let them practice in groups? Make music learning a social event. There is ample evidence from the classroom literature that the cooperative learning teams approach is at least as effective, in terms of motivation and actual performance, as either competitive or individualized instruction. School music programs do use this model, but not always as effectively as they could. To use it effectively the teacher must encourage cooperation, use peer tutoring, involve parents, set up group practice sessions that are enjoyable social events for both parents and kids, and encourage the children to work together on their own. Programs that use such an approach, like the Suzuki programs, have been very successful in getting children through that initial period when learning is slow and often tedious.

The second approach I recommend is based on the importance of choice and intrinsic interest. Give the

children some choice over the materials to be learned. As discussed earlier, almost everyone likes some aspect of music. Find out what a child likes and allow him or her the choice of including these preferences. You can use children's preferences to help them build their sense of mastery and confidence in their own talents. As their confidence grows, you can introduce new materials that are closer to what you think they need to master in order to progress. But even when new materials are introduced, try to give the children choice and to build on their strengths. Let them listen to the music first and become familiar with it. We know that people come to like what they are familiar with (Zajonc, 1968). Consequently, anything you can do to increase children's familiarity with a piece of music before they actually begin learning it will help to increase the children's intrinsic interest in the piece and, it is hoped, their motivation to learn it.

The third approach is based on the beliefs we have regarding the nature of musical talent. Suzuki stated:

Talent is no accident of birth. In today's society a good many people seem to have the idea that if one is born without talent, there is nothing one can do about it....That is man's greatest tragedy....That is why I wrote this book....Using examples, I explain how to change a person lacking ability into a talented one, a mediocre person into an exceptional one. (1969, pp. 7-8)

Whether he is right or not is not as important as is the belief that he is correct. Continued motivation depends on the belief that one can improve. Teachers need to communicate this message to their students. It is important to point out the role effort has played in the development of all great performers, lest children conclude that they have no ability because it is hard for them. Focus their attention on their own improvements using tape-recordings of earlier performances. Point out examples of improvement in other children through continued practice. These messages will orient the children toward the belief that they will get better and that the means of improvement is under their control.

The fourth approach relates to the use of praise and criticism. Praise and criticism can be used effectively, but must be used with care. Excessive praise, insincere praise, and noncontingent praise have all been found to undermine intrinsic motivation (see Ruble & Baggiano, 1980). But praise that is contingent on very good performance or that communicates a sincere acknowledgment of a job well done is effective and can help make music lessons a more pleasant experience. Criticism can also be used to convey a positive message. When a typically motivated student who is doing very well performs below the expected level, teacher criticism can convey a strong message of confidence in the student's potential. But such criticism should be used sparingly.

The fifth approach I recommend is primarily for highly anxious children. Performing in public, especially alone, is an anxiety-provoking experience for everyone. For some children it is especially negative. Teachers should be sensi-

tive to these children. There are things we can do to reduce this anxiety. Let such students perform as part of a group. Provide less threatening situations, in which students can gradually become accustomed to public performance. Have small group recitals in which children practice performing in front of each other, and encourage parents to be an audience while their children practice. These types of activities also increase the enjoyment of practicing.

My final advice concerns the age and experience of the child. Some of these concerns I have addressed are less relevant for children younger than 8 years old. Little kids are less likely to suffer from problems associated with anxiety and low confidence. They are delightful hams and cockeyed optimists. I would take advantage of this and start them learning music while they are young.

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# Aesthetics, Biography, and History in Musical Creativity

DEAN KEITH SIMONTON

In his presentation on creativity, Michael Wallach argued that it may be best to gauge creativity by specific achievement rather than by some abstract score on a "creativity test." I would like to take this argument one step further by stating that we may learn a great deal about the creative process, person, and product by studying those creators whose contributions are unquestioned. In the realm of music, certainly, such composers as Wolfgang Amadeus Mozart, Ludwig van Beethoven, and Johann Sebastian Bach stand out as exemplars of creativity. Their accomplishments have earned them the label of "genius."

Hence I will present some of the results of a research program I have carried out since 1977 on the basis of musical creativity in those composers who have attained some fame in the classical repertoire. In my research, extensive data drawn from content analytical, biographical, and historical sources is subjected to an elaborate computerized multivariate statistical analysis in order to test hypotheses about the determinants of creative composition. Even though these investigations concentrate on the famous composers of the classical repertoire, they are not extremely elitist autopsies of dead people. In the first place, most of my studies have sampled between 479 and 696 composers, including a great many relatively obscure ones, such as Granville Bantock, Albert William Ketelbey, William Grant Still, and Antoine Ysaye. Moreover, it is not true that all of the composers studied are deceased. Many of the composers in my studies still conduct their works (e.g., Leonard Bernstein), and I have even shaken hands with one of my subjects (Virgil Thompson). Therefore, the diversity of my subject population is such as to maximize the generality of any findings concerning musical creativity.

Nonetheless, you may still question the value of such studies: Why would music educators be interested in musical genius? Few of you will ever have a genius like Mozart in your classes, and most of you would be happy with just talent. As Owen Meredith noted, "Genius does what it must; talent does what it can." Nonetheless, I believe that principles of the creative enterprise abstracted from such musical greats are applicable to at least three domains in music instruction. First, my findings have value for music appreciation courses insofar as my research deals with the who, what, where, how, and why behind those compositions that make up the staple appreciation pieces. Second, some of my work may prove relevant to those of you who teach performance and interpretation, especially of classical works. An understanding of the aesthetic attributes, biographical antecedents, and historical context of a particular composition must be of some service in apprehending a composer's "intentions." Third, comprehension of the creative process of the masters may contribute to the teaching of music composition. The studies I have done on the aesthetic success of melodies appear to be of direct relevance in such instruction.

I begin my discussion with the aesthetic properties of musical compositions that are responsible for the differential fame of the diverse works of the classical repertoire. I then discuss some biographical influences on the creative process, and after that turn to the historical factors, especially the musical "zeitgeist," that affect the compositional process.

## Aesthetics

One fact is immediately apparent to anyone who listens to music: Some compositions are much more successful

than others in provoking a favorable response. In the case of classical music, for example, some compositions are true "classics," others much less so. Glancing through the season programs of a symphony orchestra or the Schwann catalogue of recorded music or tuning in to a "listener request" radio program makes it evident that some compositions are the real "war horses" of aesthetic consumption, whereas other pieces are seldom performed, recorded, or requested. In a sense, some compositions appear to be much more "creative" than others, if by "creative" we mean that the composition is appreciated by a respectable number of connoisseurs and casual listeners. Therefore, an understanding of why some musical creations are more aesthetically successful should facilitate our comprehension of creativity.

But to make any headway in this matter, we must first decide what exactly we should use as our unit of analysis. I chose to study the fundamental building block of any musical composition in the standard repertoire—the theme or melody. Though there is, no doubt, much more to a great composition than just the quality of its thematic material—the form and instrumentation count for something too—an interesting, beautiful, or powerful theme may salvage an otherwise undistinguished composition. And, in any case, the other aspects of musical creation can only work with the thematic material at hand. Theme and variation, fugue, rondo, song, and sonata-allegro forms all depend on themes, and orchestration also often depends on the nature of the melody.

I turned to the two thematic dictionaries compiled by Barlow and Morgenstern (1948, 1950), one for instrumental and the other for vocal works. These dictionaries contain all the melodies that had some claim to general recognition by the first half of this century. Altogether, around 18,000 themes are contained in these two volumes. However, since some of the themes are both vocal and instrumental, such as Beethoven's "Ode to Joy," and since I was not able to find pertinent biographical and historical information for every theme (e.g., folk songs, which are normally anonymous, and themes lacking the composition dates needed to estimate the musical zeitgeist and composer's age upon conception), my sample was reduced to 15,618 themes by 479 composers. On the basis of a study published by Moles (1958/1968), it is likely that this thematic material accounts for well over 90% of all music listening in the classical repertoire.

That is not the same, however, as saying that all melodies are equally famous. I am confident that every one of you could hum with appropriate fanfare the "fate knocking at the door" (or "victory") motif from Beethoven's Fifth Symphony, but who among you could provide me with even an approximate quotation of the second theme from the second movement of the F major harpsichord sonata by Antonio Sacchini? The vast majority of even these "notable" melodies would stump most music lovers. Consequently, it is a meaningful task to measure the different popularity of these 15,618 themes. This I did by consulting 30 sources, including 6 music appreciation texts, 5 record-buying guides, 2 collections of popular excerpts, 2 general cultural histories, 1 thematic dictionary, and 1 library score guide (Simonton, 1980a,

1980b). Sources that distinguished one or more grades of fame (e.g., by assigning stars or boldface type), were used to establish fame scores ranging from 0 to 38. There is a strong case for believing that these scores reflect differences in the aesthetic success of the pieces that comprise the classical repertoire.<sup>1</sup>

Now that we possess a reasonable gauge of the most and least preferred melodies in the classical repertoire, the next step is to quantify the factors that may cause a theme's aesthetic success with audiences and performers. The number of possible factors is immense, and so I restricted attention to a single, simplified dimension. The thematic dictionaries by Barlow and Morgenstern (1948, 1950) conveniently transposed the notes of each major theme to C major and each minor key melody to C minor. A scan of these transposed C-tonic note sequences confirms what we all know from listening and playing music: Some melodies are far more original or unpredictable than others. Some themes feature a great many chromatic notes, for example. And the transitions between notes may be by less common intervals. Therefore, I calculated the two-note transition probabilities between consecutive notes. In particular, I took the first six notes of each of the 15,618 themes and calculated how frequently various note pairs occurred, each melody containing five such two-note transitions. For example, 6% of the transposed two-note transitions were G-G, 5% were G-C, and 4% were C-G; these were the three most common pairs. Consequently, a theme that ran C-G-G-G-G-C (which happens to be the theme of "The Hut of Baba Yaga" in Modest Mussorgsky's music appreciation course staple, *Pictures at an Exhibition*) would not be considered a strikingly original musical idea. In contrast, the opening theme in Mozart's "Dissonant" Quartet, K. 465, begins A-G-F<sup>#</sup>-G-A-B<sup>b</sup>; a more original series of two-note transitions, especially given that the composition is supposed to be in C major. In any event, these transition probabilities were then used to define the "melodic originality" of each theme. The more rare the notes and the intervals between the notes with regard to the scales that define the diatonic system of classical music, the higher the assessed melodic originality of the theme.

I recognize that my method of defining the melodic originality of each theme is replete with simplifications. All of you, as music educators, will summon at least a dozen objections to my procedure. For one thing, I have omitted any quantification of the rhythmic originality of a piece. This omission I can only defend by citing research indicating that rhythm carries far less information than does pitch (Chamberlain, 1974). As we often witness in a theme-and-variations movement, a melody can undergo all sorts of rhythmic transformations, including the most distorting syncopations, without affecting the basic recognizability of

<sup>1</sup>To further validate this thematic fame measure, I calculated the correlation between this index and the frequency of performance for 30 works by Beethoven, 36 works by Bach, and 37 works by Mozart (Moles, 1958/1968, pp. 29-30). The resulting correlations are .67, .74, and .60, respectively. These correlation coefficients are biased downwards insofar as only the top works were included rather than the entire lifetime output. Even so, works scoring high in "thematic fame" are indeed more likely to be heard in the concert hall.

the theme. Yet you may continue to object with the observation that rhythm interacts with pitch in the determination of a melody's aesthetic impression. A chromatic note that lands on a weak upbeat at the close of a measure is less potent than one landing on the strong downbeat of the measure. But the addition of rhythmic considerations would not only make the content analysis incredibly complicated, but prohibitively expensive besides. The financial factor also constitutes my chief response to the criticism that I did not consider transition probabilities beyond the second order. I would add to this response that results of a pilot study in which I compared the melodic originality scores obtained from two-note transition probabilities with those from three-note transitions yielded a correlation of .81.

Still, many of you may express skepticism that anything can be learned from just the first six notes of each theme, since most musical ideas in classical music are not tunes but thoughts that extend for measures. In truth, the first notes contain an impressive amount of subtle information. Paisley (1964) proved that the two-note transition frequencies for the first four notes of each theme suffice even to identify the styles of different composers. He found, for example, that of Bach, Franz Joseph Haydn, Mozart, Beethoven, and Johannes Brahms, Mozart was the composer most likely to repeat a note, usually as a tonic-tonic, third-third, or fifth-fifth pair. In contrast, Bach and Brahms were more prone to move by one-semitone jumps and thereby to involve more chromatic tones. Using these transition probabilities, Paisley was able to correctly identify who composed the themes in several test samples. As we would anticipate, Bach and Brahms are most strongly separated from the other composers in style, Bach representing the Baroque period and Brahms the Romantic period, yet even the three Classical period composers are clearly differentiated (though, of the three, Mozart and Haydn are the most similar in style). When a test was run to see if any of these five composers could have also written the themes of George Frideric Handel and Felix Mendelssohn, the answer was negative. If the two-note transition probabilities for the first four notes of each theme are sufficient to uniquely characterize the personal style of each composer, the probabilities for the first six notes should serve us well in defining the melodic originality of each theme.

The melodic originality of a theme also differs for various types of compositions in a manner consistent with our expectations. For example, it makes a difference whether the theme came from an instrumental or a vocal work. Given the limitations on the human voice compared to the piano or violin, it comes as no surprise that themes drawn from the instrumental repertoire tend to be much more original than those taken from vocal literature. The main theme from a piano sonata is likely to have more uncommon two-note transitions than one from an art song. Moreover, the form of the composition also influences the melodic originality of its themes in a predictable manner. In particular, themes from chamber and church music tend to be much more original than those from concert music; concert music themes, in turn, exhibit more originality than themes from the theater. (Those of us who feel

that a composer's profoundest thoughts tend to be reserved for chamber and church compositions and that ballet and opera are much less musically profound are thus vindicated.) In any event, all of these results are consistent enough with our musical experiences that we may reasonably place some faith in the melodic originality measure, however approximate it may appear.

I will present more evidence for the reliability of the melodic originality indicator later in my presentation. At this point, I will address the issue for which that measure was first calculated: What is the relationship between thematic fame and melodic originality for the 15,618 themes sampled? This relationship was determined using a multiple regression analysis that incorporated over 30 variables in order to control for possible artifacts (see Table 1 of Simonton, 1980b). Figure 1 gives the outcome. Thematic fame (on the vertical axis) is shown to be a function of melodic originality (on the horizontal axis). What we see is that the aesthetic success of any given theme tends to be a curvilinear inverted-J function of its melodic originality. That is, as we increase the unpredictability of a theme (in terms of its two-note transition probability), it becomes even more memorable up to a certain peak, but thereafter memorability declines. Indeed, the

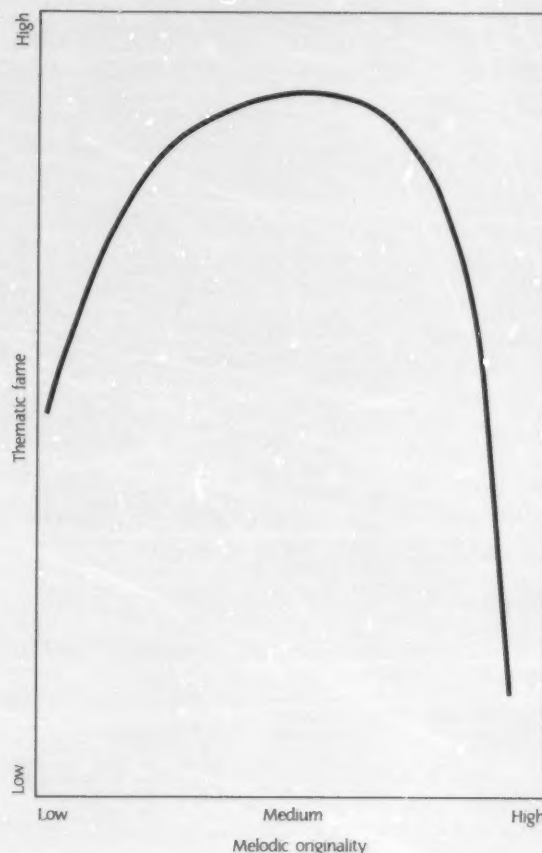


Figure 1. The functional relationship between thematic fame and melodic originality for 15,618 themes drawn from the classical repertoire.

most original themes are much less successful than are the most unoriginal themes. Though listeners prefer musical ideas of moderate novelty, if they only have a choice between trite tunes and totally incomprehensible atonal, serial, or intensely chromatic note sequences, they will take the easy path to music listening.

This curvilinear function is of great theoretical value for our understanding of what is to be judged creativity in a musical composition. Edward Walker (1981), in the 1979 session of the Ann Arbor Symposium, discussed what he didactically referred to as the hedgehog theory. According to this theory, the preference for stimuli is a function of the psychological complexity of the stimuli, where that function follows a curvilinear "Wundt curve." Both extremely simple and extremely complex stimuli are judged as unpleasant, though for different reasons. Simplicity provokes boredom—a big yawn if not an outright stupor—whereas complexity elicits irritation or anxiety, such as many audiences feel on the debut of some piece of avant-garde music. Somewhere between these two extremes is the optimal complexity level that stimulates interest and attention, even curiosity and fascination, of just the right degree. The role of aesthetic stimuli may thus be seen as the production of just the correct amount of arousal to give the audience an arousing experience free of either boredom or anxiety. Much of the research in experimental aesthetics has been dedicated to proving the veracity of the optimal arousal model of aesthetic experience (Berlyne, 1971; Heyduk, 1975; Steck & Machotka, 1975; Vitz, 1964). Yet what Figure 1 indicates is that this model applies not only to the judgment of artificial stimuli by students in laboratory cubicles, but also to the relationship between the objective content analytical attributes of real musical creations and the frequency with which these creations are likely to be heard in the concert hall or recording studio. Further, this relationship was discovered even though we defined melodic originality solely in terms of two-note transition probabilities and omitted any reference to the influence of rhythm, orchestration, and structure. Thus the optimal arousal model has been shown to be both valid and robust.

### Biographical background

In treating the basis for a composition's aesthetic effectiveness, we have yet to introduce the composer into the picture. Yet the creation of musical compositions does not take place in divine isolation from the world of human existence, outside the realm of mundane struggles and accomplishments. On the contrary, we can hardly attend a concert or browse through a record store without coming across some program or liner note that strives to embed a particular composition in the context of the composer's personal life. Maybe the abstractness of classical music invites a look at the composer's biography in order to render the musical experience more concrete. At any rate, as a psychologist I cannot help but be curious about how personal biography intervenes in the creative process. A great deal of my research has looked at the biographical antecedents of creative production, and a respectable

proportion of this research has concentrated on musical creativity (Simonton, 1977a, 1977b, 1980a, 1980b). Rather than recount all the diverse findings, I will mainly discuss two major results (Simonton, 1977a, 1980a).

One obvious question is whether the composer's age determines the quality and quantity of compositional activity. Now there is abundant evidence that the peak age for producing musical masterworks falls around 40 (Lehman, 1953, chap. 4; Simonton, 1977a, 1977b, 1980a, 1980b), though the exact location of this optimal age varies according to the type of composition created; the peak for art songs occurs much earlier and that for operas much later, for instance. Yet given that melodic originality has such an important part to play in the aesthetic success of a composition, it is worth noting that there is a similar peak for this factor too. The melodic originality of a theme is a curvilinear function of the composer's age at the time of composition, only this time the peak age is around 56 (Simonton, 1980a). Thus, whereas the 40th year represents the high point of productive output, it is not until the midfifties that the high water mark in originality is attained. Beethoven, for example, who only lived to be 56 anyway, capped his creative life with his highly original last sonatas and late quartets, including the String Quartet No. 14 in C-Sharp Minor, Opus 131, providing many examples of prime melodic originality far beyond the easy melodies of his first and second periods of compositional style development. Evidently, classical composers are engaged in a constant struggle to surpass the originality of what they have done before, enhancing the odds that each theme will be more richly chromatic than any composed before. Only in the 60s and 70s of life does this unrelenting push toward originality back off a bit. For those composers who live long enough, the data show some tendency to shy away from the intensity of their 50s, the direction being more towards diatonic resignation and repose (Simonton, 1980b).

A second biographical determinant of melodic originality is even more intriguing: Those themes that are composed when the composer was forced to endure extreme life stresses, such as the death of a loved one or a terminated love affair, were more likely to display those chromatic two-note transitions (Simonton, 1977a). Original thematic ideas are associated with intense personal stress. To demonstrate the relationship, I compiled an extensive chronology of key life events for each of the studied composers. I then adapted a version of a life-change scale that was devised by researchers in psychosomatic medicine to gauge the amount of stress that a person encounters in a everyday living (Holmes & Rahe, 1967). This scale allowed a quantitative comparison of the degree of melodic originality in a theme and the intensity of personal stress experienced during the time that the theme originated. These two variables turned out to be significantly correlated.<sup>2</sup>

<sup>2</sup>This finding is based on the lives of just the ten top-ranked composers according to Farnsworth's (1969) survey for the American Musicological Society. The composers were Bach, Handel, Haydn, Mozart, Beethoven, Franz Schubert, Frederic Chopin, Richard Wagner, Brahms, and Claude Debussy. These composers are responsible for 5,046 of the themes studied in the present research.

This result is significant for our understanding of the music appreciation process. It is often thought that one primary function of music is to express human emotions—that the shape of a melody in some mysterious manner mirrors the structure of the internal emotional states, so that a composer can impress upon us a deep and intimate feeling across that wide space of the concert hall. Beethoven advised listeners that his Pastoral Symphony was “more expression of feeling than painting,” and over the opening Kyrie of his *Missa Solennis* Beethoven wrote “It comes from the heart—may it go to the heart.” In an earlier session of the Ann Arbor Symposium, Roger Brown (1981) provided evidence of the expressive power of classical music. But such romantic ideas about the purpose of music are also apparently endorsed by this association between stressful events and the originality of the themes composed concurrently. This endorsement only requires the assumption that there is some connection between melodic originality and emotion. Of course, we have already observed that arousal or excitement tends to increase with the increased unpredictability of aesthetic stimuli, but now we must go beyond the mere relief of boredom to the actual communication of emotion.

Leonard B. Meyer (1956), a musician at the University of Chicago, wrote in his excellent book *Emotion and Meaning in Music* that chromaticism is firmly linked with emotional expression in music. The tortuous ambiguity inherent in profound grief is reflected in the ambiguous course of a chromatic theme, a theme that seems to avoid resolution and to waver on the brink of dissolution into chaotic nothingness. Meyer quoted John Daniel who, in a 1606 book called *Chromatic Tunes*, wrote that “chromatic tunes most like my passions sound,” a phrase Daniel dutifully set to most chromatic music. Such chromaticism may assume many forms naturally enough. One manifestation is the blue note in jazz music, that quasischromatic minor third that derives from “singing the blues,” an obvious reference to an emotional state, especially one experienced on the loss of a loved one or during loneliness and despair. Another manifestation, according to Meyer, is the use of minor mode. Discussion of the supposed emotionality of minor keys may seem trite, but the reality of this association cannot be ignored. Melodies written within the minor scale, even if they contain not one single chromatic note in the technical sense, nonetheless sound chromatic. There persists an intrinsic ambiguity, a fundamental unpredictability in such melodies. In fact, in my inquiry into the 15,618 melodies that make up the bulk of the classical repertoire, the two-note transitions that define the minor mode were much less frequent. Thus, melodies in a minor key come out featuring more melodic originality according to my computerized content analysis. So we can infer that biographical stress may increase a composer’s willingness to use the minor mode in his or her thematic thinking.

Needless to say, composers themselves are very aware of the relationship between emotional communication and chromaticism in its several guises. Henry Purcell obviously had this effect in mind when he created the famous

“Dido’s Lament” near the close of his *Dido and Aeneas*, and many other composers use this principle when constructing the melodies for their most heart-felt arias or songs. The minor mode is a tool in every composer’s bag of tricks. Mozart reserved the minor mode for his most melancholy thoughts, as his G Minor Symphony and G Minor String Quintet demonstrate, whereas his piano concerti, which were designed to impress audiences with happier feelings, almost always were in the major mode. Yet my investigations have taken us beyond these truisms. We have established that melodic originality—our abstract representation for chromatic and quasischromatic transitions—is more prone to appear when a melody is conceived by a composer under the most trying life circumstances.<sup>3</sup>

#### Historical context

In Aaron Copland’s popular *Lincoln Portrait*, the sixteenth president is quoted as saying that “we cannot escape history.” Musical creativity also cannot escape history. A musical idea is subject not only to certain aesthetic requirements and to the influx of personal biographical realities, but to the events that comprise larger human affairs. Again, I have published several investigations into the relationship between musical creativity and the political, cultural, and intellectual zeitgeist (Simonton, 1975a, 1975b, 1976, 1977a, 1977b, 1980b). But all I will cover here is the way that the creative musician is ultimately dependent on the musical zeitgeist or spirit of the times. Whether classical or popular music, styles change over time. A composer must stay in step with those stylistic changes. To better appreciate how changes in the musical zeitgeist affect the course of a composer’s creativity, let us return to the melodic originality variable discussed earlier in this paper. We must specifically inquire how this measure has changed over history. Have melodies in the classical repertoire tended to become ever more original? Are there any cyclic fluctuations in the intensity of melodic originality over the past 500 years of music history? The answers to these questions were provided by a trend analysis of the 15,618 melodies (Simonton, 1980b). The outcome of this trend analysis is exhibited in Figure 2.

Two facts are immediately apparent upon inspection of the graph. First, melodic originality displays an overall upward trend from the sixteenth century to the twentieth century. In different terms, the predictability of a melody (as gauged by its two-note transition probabilities) has generally decreased from Josquin des Pres through Arnold Schoenberg. Second, a cyclical movement is superimposed over the overall upward trend. Melodic originality first moved upward from the Renaissance and attained a high point in the early Baroque—the madrigals of Claudio Monteverdi and Don Carlo Gesualdo epitomizing this peak—and thereafter declined. By the time of Haydn and

<sup>3</sup>Contemporaneous physical illness and extensive competition from other composers also tend to increase melodic originality, which is consistent with the idea that melodic originality is a response to the composer’s emotionality at time of composition.

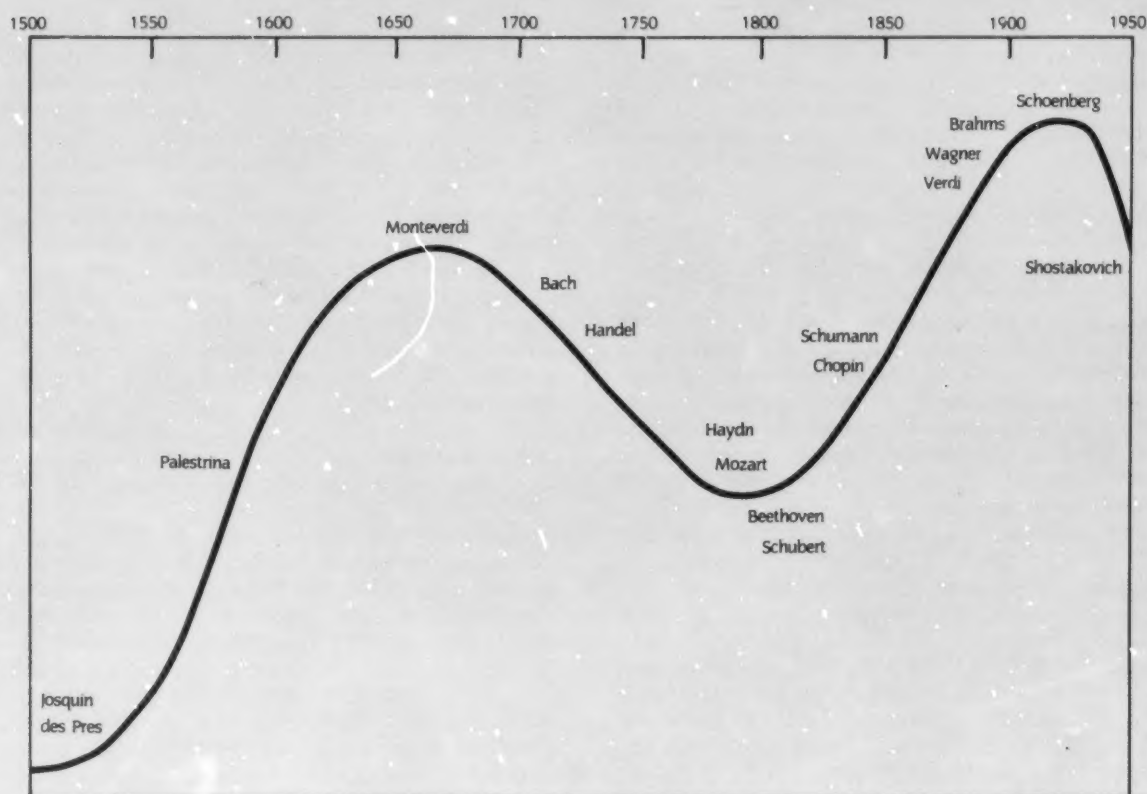


Figure 2. Melodic originality for 15,618 themes composed between 1500 and 1950 (from Simonton, 1980b).

Mozart, the thematic material had become much more predictable, melodic interest taking a back seat to the structural complexity of the sonata form and the evocative power of thoughtful orchestration. During this period any chromaticism, for example, is most likely to appear in the transitional themes rather than in the main themes. In a manner consistent with the general upward trend, this trough is not nearly so low as that of around 1500. A Classical melody still exceeds a Renaissance melody in degree of unexpectedness. Moreover, late in the eighteenth century this Classical plunge in melodic originality reversed and began its ascent once more. By the end of the nineteenth century the average level of melodic originality went beyond that of the mid-seventeenth century. Wagner's intensely chromatic writing accelerated this process until a new peak was reached in the early part of the twentieth century, exemplified by the atonal and serial constructions of Schoenberg. Then a new downturn occurred, a waning of melodic originality that continued to the middle of this century, when the most recent themes in my sample were composed. The dominating compositions heard toward the mid-twentieth century were more neo-Romantic than avant-garde (e.g., Copland, Dmitri Shostakovich, Benjamin Britten, and Francis Poulenc).

The trend shown in Figure 2 is virtually identical to the ups and downs in chromaticism over the same years (see, e.g., Apel, 1969, pp. 164-65). This correspondence is not surprising when we recall that chromaticism monopolizes

the measure of melodic originality. A melody infused with chromaticism cannot help but be original, and vice versa. Still, this correspondence should give us additional confidence in this content analytical measure, however crude it may have appeared at first glance. In particular, the curve seen in Figure 2 can be taken to be a trustworthy representation of the musical zeitgeist as it pertains to melodic creativity between 1500 and 1950. We can use this information to answer two questions.

First, what are the consequences if a composer decides to ignore the zeitgeist and compose melodies inconsistent with it? What happens, for instance, if a composer of the Classical period insists on creating highly chromatic melodies or if a composer of the early twentieth century insists on creating retrogressively diatonic melodies? To respond to this question we must distinguish between two types of melodic originality. So far we have been speaking of repertoire originality, which is defined as the theme's two-note transition improbability with respect to the entire classical repertoire of 15,618 themes and is reflected in Figure 2. But there is also zeitgeist originality, or the degree to which a given melody departs from the style prescriptions of the era in which it was created. To derive this variable I subtracted the predicted degree of originality (according to the fifth-order polynomial time function that gave us Figure 2 in the first place) from the degree of repertoire originality. I then could examine the relationship between the zeitgeist originality of a theme and its

aesthetic success using the thematic fame measures defined earlier. The outcome was intriguing: The functional relation is defined by a J-curve. This means that the most famous melodies tend to be those that depart from the musical zeitgeist, though those that do so by being more original are favored more than those that depart by being less original. Evidently, a composer's creativity partially depends on a willingness to ignore the dictates of the musical zeitgeist, especially when the lack of uniformity takes the form of an originality that goes beyond what is currently fashionable. Musical creativity requires independence.

This finding leads us to ask the next question: What predicts a composer's propensity to defy the contemporary style prescriptions by producing musical ideas that are either more or less original than the zeitgeist recommends? The most important factor that has been found to date is age. As composers get older, the zeitgeist melodic originality of their themes tends to increase. Unlike thematic fame and repertoire originality (which exhibit age peaks at 40 and 56 years old, respectively), this age trend is strictly linear. Right up to a composer's dying days the melodic production becomes ever more resistant to zeitgeist influences. In other words, the development of musical creativity over the lifespan means a shift from high zeitgeist dependence in the early years to high zeitgeist independence in the later years. A young composer is given to imitation of contemporary fashions, whereas the older composer has finally found a personal style, the pursuit of which is less affected by extraneous interference from the zeitgeist. In a sense, as a composer matures the creative enterprise switches from apprenticeship and assimilation to self-actualization. Hence, although it is true that we cannot completely escape history, composers can learn to do so with personal creative growth. Furthermore, there are some benefits that accrue to the composer who manages to escape the confines of the times. The great composers are those who strike out to evolve their own unique, recognizable style. Bach may have been left in the dust by the more contemporary trends in musical style that emerged in his later years, but the works of his last years, old-fashioned to the ears of contemporaries, more fully epitomized Bach's exceptional musical personality. The same may be said of the landmarks of Beethoven's third period—landmarks not so much in the evolution of musical styles as in the development of Beethoven's personal expressiveness.

## Conclusion

The foregoing results concerning the aesthetic, biographical, and historical context of musical creativity may be summarized in two generalizations. First, emotion does play a very significant role in musical creativity. We have seen that the aesthetic success of a melody depends on the capacity of a theme to provoke an optimal level of emotional arousal. Furthermore, the degree of melodic originality exhibited by a theme—the originality that is responsible for the arousal—is itself a partial response to the emotional state in which the composer finds him- or herself at the time of composition. So a musical

creation probably produces emotion in the listener by both stimulation and communication.

Second, creativity in music involves some degree of personal self-actualization or intrinsic growth. On the biographical level, the composer produces melodies of ever-increasing originality as his or her career progresses, this upward trend only turning around in the late 50s. And on the historical level, as a composer gets older the melodies he or she creates become increasingly independent of the stylistic prescriptions that define the musical zeitgeist. This departure from the prevailing style does the composer no ill, however, for those melodies that fail to conform to the zeitgeist are more likely to be aesthetically successful with audiences. Although these two main generalizations are founded on studies of classical composers, I see no reason to downplay their relevance to all classes of musical creativity. Emotional expression and developing self-actualization may be fundamentals in the creative process for jazz and rock performances as much as they are for classical composition.

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# Musical Chairs: Who Drops Out of Music Instruction and Why?

MARTIN V. COVINGTON

One of the perennial concerns of educators in the arts was put succinctly by Pablo Picasso when he observed, "Every child is an artist. The problem is how to remain an artist once he grows up." The purpose of this essay is to explore the motivational basis of the teaching-learning act, particularly as it relates to the goals of music education and to the commonplace diminishing commitment to music learning as youngsters grow older.

This paper assumes a fundamental similarity in the motivational processes that initiate and sustain all learning, whether it be mastering a difficult piano fingering, applying Ohm's Law to an electrical design problem, or understanding how the events of the American Civil War influence society today. To the extent that a basic motivational equivalency exists across all subject matter, music educators can profit from what is known about the underlying dynamics of academically oriented, classroom learning.

Briefly, what are some of the parallels between the motivation and learning found in music and in those of other subjects? First, academic learning involves a variety of motivations. Music learning is no less subject to a multitude of passions and impulses. If we accept the observations of Robert Schumann, "People compose for many reasons: To become immortal; because the piano forte happens to be open; because they want to become a millionaire; because of the praise of friends; because they have looked into a pair of beautiful eyes; for no reason whatsoever." The point here is that people are motivated to excel for many reasons, and not always for the best of reasons.

Second, true academic knowledge demands the time-consuming and frequently laborious acquisition of a vast network of skills, strategies, and techniques if the

youngster is to be carried beyond the initial flush of discovering that, for instance, those little letters on the page of a book are a form of shared communication. The same pertains to music learning. The primitive exhilaration experienced by the young child at being able to reproduce sounds must give way to mastery and control if real music appreciation is ever to emerge. Thus discipline is also a common denominator of all successful learning. Yet, as we shall observe, discipline is hard to cultivate when motives are mixed.

Third, a more disquieting similarity must also be mentioned, borne out of Picasso's comment about the failure of sustained motivation. All educators find common cause and concern in the indifference, anxiety, and laxity that characterizes much learning today. It is on this point of motivational deficiency that I will focus my comments.

Finally, we need to acknowledge that music education also exhibits many unique properties, unlike those of regular academic learning. Much can be said here, but I will mention only one difference because it becomes important to us later. Whereas the basic objectives of academic learning are often extrinsically oriented (that is, learning is valued as a means of achieving future occupational success), music education is widely held to be intrinsically oriented (of worth primarily for its recreational, cultural, and self-expressive value). We need only review any standard book of quotations to recognize just how idealistically we conceive the artistic mission in our society. One basic question here is whether or not this apparent difference in goals between academic and music learning is sufficient to exempt the musical enterprise from many of the self-defeating, destructive motivational dynamics that often attend other school learning.

In the first section of this essay I will present an analysis

of classroom achievement motivation, and in the second section I will explore the implications of this model for music instruction and support my conclusions with data collected especially for this conference.

#### **Classroom achievement motivation**

The most pervasive, common-sense theory of learner motivation derives from the centuries-old observation that people tend to repeat those actions that are rewarded and to inhibit or at least postpone those actions that are punished (cf. Skinner, 1971). As teachers, we variously encourage, cajole, insinuate, and implore students in the conviction that directed guidance is a necessary part of all worthwhile accomplishments, in the hope that such external sources of motivation as teacher praise and displeasure will be transformed in time by students into an intrinsically driven involvement. In this process of differential teacher reinforcement, it is the amount and quality of student effort that we seek to alter. As part of a larger cultural work ethic, we reason that while not everyone is brilliant, at least everyone can try.

I do not offer this analysis of a reinforcement view of motivation to reject it, since it is a powerful extension of the pervasive parent-child rearing model in our society and is therefore unlikely to yield anyway. Also, it seems to work tolerably well much of the time. My concern is that it should work better; better in the sense that teachers encourage not only compliance with the technical requirements of learning, but that they also stimulate the joyful, sustained, and creative use of what is learned. In suggesting improvements, I draw attention to the question of what it is that young learners focus on in the process of teacher reinforcement. Teachers naturally assume that because they reward student effort, students will also attend to these aspects of learning and come to internalize the teacher's values that stress a work ethic. However, recent research questions this assumption of shared values (Covington & Omelich, 1979a, 1979b). The research suggests that although teachers focus on student effort, students themselves are preoccupied with the need to establish and maintain a sense of competency. But why should this be? And how can the proposal of a teacher-student conflict of values help us understand just how difficult it is to keep students involved in their learning as they grow older?

The answer to these questions lies in an alternative view of the nature of achievement motivation. This view holds that achievement behavior is the result of an emotional conflict between hope of success and fear of failure (Atkinson, 1957, 1964; Atkinson & Raynor, 1977). It assumes that motives are not simply the consequences of reinforcement schedules, to be created or dismantled in accordance with the prevailing ratio of rewards and punishments. Rather, motives represent fundamental ways in which individuals organize and make sense out of their experiences. For example, motives not only drive people but also dispose them to interpret the causes of their successes and failures in different ways; and the way a person perceives an event can be as critical as the fact of its occurrence.

Although researchers know relatively little about the dynamics of striving for success, the topic of fear of failure has commanded much attention over the past several decades (for a review, see Birney, Burdick, & Teevan, 1969; Covington & Beery, 1976). It appears that a great many people—and probably everyone from time to time—are driven to avoid failure. A variety of strategies are available for this purpose. Sometimes we try extra hard, that is, we seek to avoid failure by succeeding. This technique is most attractive when we believe the chances of success are good. At other times, when we judge the likelihood of success as low, we may act in counterproductive ways by procrastinating or by setting goals so high as to be unattainable. Although these actions actually insure the very failures we seek to avoid, at least we are less blameworthy, since excuses for failure are available. The procrastinator can maintain that he didn't have enough time to study, and unattainable goals mean that no one could really have been expected to succeed anyway.

Individuals are driven to such extraordinary lengths because failure implies low ability, and self-perceptions of incompetency are threatening. Our society tends to equate personal worth with the ability to achieve, especially in competitive environments. In effect, we are only as good as our achievements. Given this value system, researchers were not surprised to find that the sense of shame and humiliation that typically follows failure is caused largely by increased suspicions of inability (Covington & Omelich, 1981; Covington, Spratt, & Omelich, 1981).

From this it can be deduced that distress in failure also depends on the amount of effort expended, but not in the way expected. Trying hard in a failing cause leads to more shame, not less shame, in an apparent contradiction of the work ethic morality. We now know this occurs because a combination of high effort and failure implies low ability (Kun & Weiner, 1973) and, as we have just seen, perceptions of incompetency lead to shame. Thus, for many students trying hard (or being motivated) can be a direct threat to their sense of worth. For, if they work hard and fail anyway, the implication is that they lack ability. On the other hand, not trying minimizes information about one's ability and in the event of failure one's ability status is left vague and uncertain. Naturally, students cannot permanently adopt a strategy of inaction, since not trying meets with teacher disapproval. As already noted, teachers value effort; they reward success more and punish failure less when the student has tried (e.g., Rest, Nierenberg, Weiner, & Heckhausen, 1973; Weiner, 1977).

Thus many students must thread their way between the threatening extremes of high effort and no effort at all. For this reason, effort has been characterized as a double-edged sword (Covington & Omelich, 1979a). Excuses, chiefly in the form of rationalizations, are the student's basic ally in achieving this precarious balance. Excuses externalize blame for failure, placing it away from the internal, stable element of ability.

Several points have been made thus far: (1) failure to maintain a sense of ability triggers shame and a loss of self-respect; (2) students and teachers are locked in a conflict of values regarding effort and ability; and (3) excuses

for not trying or for explaining why trying did not pay off deflect the personal implications of failure and at the same time tend to reduce teacher displeasure.

Each of these points can be demonstrated in a single experiment conducted by my colleague, Carol Omelich, and me (Covington & Omelich, 1979a). College students were asked to estimate their academic ability and to introspect their affective reactions to each of four kinds of hypothetical test failure: little effort or study ( $E-$ ); little effort with an excuse ( $E-/X$ ); much effort ( $E+$ ); and much effort with an excuse ( $E+/X$ ). The excuse accompanying high effort was that the instructor emphasized material on the test different from that studied by the student; little effort in failure was justified by reason of illness. The results of the study are presented in Figure 1.

We see that students experienced the greatest loss of esteem and most shame under conditions of high effort and the least under low effort. Additionally, shame was reduced when excuses were available. A statistical analysis that allowed us to infer causal relationships indicated that loss of esteem followed in part from decreased self-perceptions of ability. Thus, shame resulted from seeing oneself as incompetent, and evidence of incompetency in turn depended on the conditions of failure, primarily amount of effort expended and the presence or absence of an excuse.

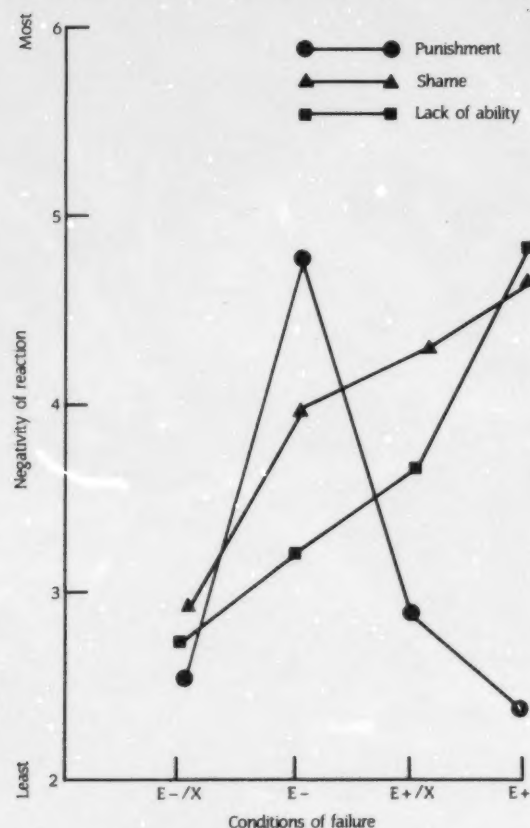


Figure 1. Teacher and student reactions to failure under four conditions of effort expenditure.

We also asked our subjects to adopt the role of teachers and punish these hypothetical students under the same four conditions of failure. From Figure 1 we note that our "teachers" punished diligent students less than those who did not try. Effort is critical for students, too, but as I have argued, in a different way. This incompatibility is best demonstrated by considering the superimposition of data for teacher punishment on that for student self-estimates of ability and for their affective reactions to failure. The incompatibility of student and teacher reactions was most striking under conditions of failure with high effort ( $E+$ ). Although teachers punished students least under these conditions, students felt most incompetent and experienced the greatest degree of personal dissatisfaction and shame. In contrast, although low effort ( $E-$ ) substantially reduced student discomfort, it did so at the cost of a considerable increase in teacher punishment. The data suggest that excuses maintain a balance between trying and not trying. For example, teachers made allowances for low effort if the student had a plausible explanation for why he or she did not study ( $E-/X$ ). Without an excuse the same low effort ( $E-$ ) was severely punished. At the same time, excuses reduced student shame and feelings of worthlessness regardless of effort level.

From this study and others (e.g., Covington, Spratt, & Omelich, 1981), we conclude that a "safe" strategy emerges for failure-threatened students that is designed to minimize teacher punishment and reduce, at least temporarily, the shame and humiliation that accompanies failure: Try or at least appear to try, but not too energetically, and with excuses always handy. It is difficult to imagine a strategy better calculated to sabotage the sustained pursuit of personal excellence.

These data may fairly describe the mentality of many young adults of high school and college age, but what about younger students? Are younger individuals subject to different motivational dynamics that might help us understand the progressive loss of involvement in learning as they grow older? To explore this question another colleague, Oren Harari, and I (Harari & Covington, 1981) essentially repeated the preceding experiment, but modified the questions so we could study several grade levels from kindergarten through college. We found that, irrespective of age, all students strongly valued ability in both success and failure circumstances. Curiously enough, however, the younger the child, the more he or she also valued effort. Among adults, we know that a combination of high effort and failure raises suspicions about ability. How, then, can younger children value effort even in failure, when ability is also very important to them?

The answer is that for young students, effort expenditure does not imply low ability; rather it implies competency. This occurs for two reasons. First, for our young subjects trying hard was considered *prima facie* evidence of brightness (first-grade student: "Smart students study, dumb ones don't"). Second, it was widely assumed that studying caused increases in ability. Thus for younger students there appears to be no conflict of teacher-pupil values. Both students and teachers value effort, and children can see themselves as able and virtuous, too, by

reason of trying (Covington & Omelich, 1979b; Nicholls, 1976). With younger children, the reinforcement view of motivation appears to be an appropriate and effective working model for teachers. In time, however, this positive dependency on effort gave way and was replaced by a view of ability as a stable, immutable entity, quite impervious to effort. Among our older students, hard work was no longer seen as a guarantee of success. Instead, ability became the necessary condition for success. Moreover, the self-serving aspects of effort variation became clear. Low effort in success was perceived as assuring a reputation for brilliance if one succeeded, and as obscuring the causes of failure, should it occur. One can see how counterproductive a teacher's stress on effort can be among older students.

Overall, the implications of these data are sobering. First, they suggest that the lessening of interest in intellectual matters among many adolescents may be caused by more than an increasing exploration of other life-style options, a rejection of parental values, or a growing preoccupation with peers. These explanations are optimistic, or at least benign, in that they assume a temporary state of intellectual and motivational dysfunctioning that will be corrected once adolescence ends. In contrast, the present data suggest that decreasing motivational involvement may represent a more permanent, maladaptive solution to an important developmental need: The need for self-esteem. Second, these findings imply that the problem of schooling is not simply the failure of teachers to teach (as some critics of schools would have it). Rather it is more a matter of teachers and students being victimized by a basic conflict of values. Although this explanation may represent a more balanced perspective on the role and effectiveness of teachers in general, it also implies that we may have seriously overestimated the degree to which teachers can control student motivation through differential reinforcement. For example, it is not that students are unmotivated—that is to say, "lazy." Actually these youngsters are likely highly motivated, but for the wrong reasons; and these reasons will not easily yield to conventional methods of teacher reinforcement. Indeed, the root problem (that of anchoring one's sense of worth in the ability to achieve) may be more than a match even for the most supportive, enthusiastic, and giving of teachers.

#### **Fear of failure in music**

To what extent is this self-worth view of learner motivation appropriate to music education? Also, to the degree that it may apply, what can or should be done about it?

Actually, the first question devolves into a series of sub-questions: First, while much academic, classroom learning is animated by competitive motives (Ames & Ames, 1981; Beery, 1975; Covington & Beery, 1979), do not the recreational and self-expressive goals we associate with music tend to minimize competitive pressure and thereby render the self-worth model inappropriate? Moreover, one might expect even less of a fit with the model in the case of private, individualized music instruction, which seems far removed from the motivational trappings of grades and gold stars and competitive peer pressure.

Second, to what extent does the distress that follows the failure to perform well musically depend on self-perceptions of inability; and does practicing a great deal pose the same kinds of conflicts for young musicians that studying hard on academic topics does for most youngsters?

Third, is the role of excuses as a means of avoiding inferences of inability similar in the music realm to that found in regular classroom learning?

In preparing this paper, I conducted some research that addresses these and related questions. Basically, I repeated the experiment conducted by Omelich and me, but modified it to reflect certain basic parallels between music learning and academic, classroom learning. My subjects were 250 University of California freshmen who had a history of musical training in high school and in earlier years. All students were presented with two hypothetical music achievement scenarios. One dealt with group instrumental lessons of the kind typically offered in high schools, and the other involved private, individual music lessons offered outside of school. The latter scenario read as follows:

Imagine that you take private music lessons. Your teacher asks you to play so he/she can check your progress. Below are several different things that might happen to you.

Four variations of a basic failure outcome completed each scenario: little effort, E- ("You practiced very little for your lesson, and did not play well"); little effort with an excuse, E-/X ("You practiced very little due to illness, and did not play well"); much effort, E+ ("You practiced very hard, but still did not play well"); and much effort with an excuse, E+/X ("You practiced very hard, but the teacher had you play a different piece, and you did not play well"). Under each of these four conditions of failure, students were asked to estimate the degree of music ability others would judge them to have and also to introspect the degree of shame they would experience.

In addition, students provided biographical information, including the extent of their current and past involvement in music and degree of pride in their musicianship. On the basis of this information, a subsample of students was identified that had an extensive history of musical training, notable accomplishment and a commitment over the years, and who were still active musicians. These students epitomized sustained, motivational involvement. We may refer to them as "superstars." A second group was identified for whom music had been of passing, even fleeting, interest and was no longer being actively pursued. This group will be referred to as the "dropouts."

First, consider the dropouts. The reactions of these students to the music scenario experiment were essentially identical to the results described earlier for academic learning. In fact, the findings were so parallel that the reader is referred once again to Figure 1. Additionally, the findings were the same for the private and group lesson scenarios; so much so that the data for these two versions can be combined and treated as identical. Apparently, whenever an evaluative mode is introduced, even the

relatively innocuous one used in the music scenarios ("...so [the teacher] can check your progress"), a threat to self-worth is triggered (Ames & Ames, 1981).

These similarities in achievement dynamics between music and academic learning tell us that the protection of one's ability is a major preoccupation among many students, irrespective of subject-matter content. First, the close parallel between music ability ratings and degree of shame experienced indicates that distress in music failure depends largely on perceiving oneself as incompetent and hence unworthy, just as was true for academic learning. Second, as was the case with academic learning, shame in music failure was also greatest when the individual tried hard—a finding that contradicts the simple reinforcement view that students should value trying, since teachers reward effort. Of course, this is understandable from the self-worth perspective. As we have shown, a combination of high effort and failure implies low ability, which in turn causes shame. Third, how can such distress be avoided? It can be avoided by using excuses that deflect inference away from low ability—and excuses in a music context appear to be just as powerful for this purpose as those used in the academic realm. The central hypothesis that these dropouts were preoccupied by the need to protect their sense of ability is given additional support by their biographical data. As a group, these students harbored a relatively low opinion of their musical ability as compared to our superstars.

Now consider the superstars. In some respects the responses of these students to the experiment were quite similar to those of the dropouts. For example, dynamics of private and group music learning were the same for the superstars as for the dropouts. One vital difference, however, emerged between the two groups. It concerned the role and meaning of effort. It will be recalled that for the dropouts, high effort caused shame because it triggered self-doubts of ability. In contrast, for the superstars it was low effort, not high effort, that caused shame. This kind of shame was different and undoubtedly reflected guilt and chagrin at not trying. Although it is true that higher effort also implied low ability for superstars, this cause of shame was relatively weak. In effect, superstars valued effort, even failing effort, despite its implications of low ability. This is because one isolated failure was not enough to raise self-doubts among these successful musicians. Such students are a joy to teach. Because they are secure in their own ability, continual effort and occasional failure hold little threat to their sense of worth. As a consequence, there is less reason for defensive posturing. Moreover, there is little conflict between teacher and student values.

### Conclusions

This music research study did not address directly the question of which *specific* youngsters will continue their musical training and which will falter and eventually drop out. But from the self-worth perspective, the basis for such predictions is clear. All other things being equal, the more individuals tie their sense of value to achievement and to the handmaiden of achievement, ability, the greater the need for defensive maneuvering should failure occur. This

process shifts the motivational base for learning from a mastery orientation to one of self-protection. The final irony is that for a very few, highly gifted youngsters, these failure-avoiding strategies will provide the motivational impetus that propels them to greatness. The best example is that of the over-striver. This person seeks to avoid failure and self-doubt by succeeding. Continual successes demand extraordinary dedication, but when unremitting effort is combined with rare talent the main ingredients for greatness are joined. Needless to say, however, there is a considerable price to be paid, since the conflicts that create such greatness also tarnish it with continuing self-doubts.

What, then, can be done to help young aspiring musicians overcome fear-of-failure dynamics? In addressing this question, let me first indicate what is not the solution. Some observers believe that by treating everyone alike—and thereby minimizing the role of talent in achievement—we will produce a shared sense of dignity for all. Others have proposed teaching in ways that minimize, if not eliminate, student failure. But to shield children from failure is no kindness; it prepares them for a world that does not exist. Moreover, the evidence presented here suggests that perceptions of ability will always play an important role in achievement no matter what we as teachers and educators might do to alter them. Thus, far from minimizing the value of talent, I suggest that we actively promote theories of ability, but theories that are most conducive to sustained motivation. Recent research suggests that those youngsters who believe that ability is a repertoire of skills that can be endlessly expanded through instruction and experience are more likely to focus on the task at hand, display greater intrinsic involvement, and be less preoccupied with learning as a test of their worth. In contrast, children who hold a view of intelligence as a stable, immutable trait worry far more about personal inadequacies and seek to reassure themselves through comparison with others. The former view of ability is reminiscent of the beliefs held by very young children in which, it will be recalled, ability was seen as an incremental process that depended on hard work (Harari & Covington, 1981). Thus we come full circle to Picasso's earlier comment with an observation of our own. In order to sustain the artistic side of our adulthood, we must help our students to share a view of the world possessed by only the very young.

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# Fostering Creativity and Problem Solving

DONALD J. TREFFINGER

Creativity is one of those psychological constructs in which many people have some interest, despite the fact that no one can claim a comprehensive understanding. Its elusiveness is probably the source of its appeal for the researcher as well as for the layperson. Creativity has thus been a topic of concern for artists and writers, the media, and assorted intellectual critics, with particular interest focused on the tantalizing puzzles of trying to measure it and then nurture it. This paper will not attempt to review the recent history of writing on creativity, for these issues have been chronicled adequately elsewhere (e.g., Guilford, 1967; Parnes, Noller, & Biondi, 1977; Torrance, 1972). This paper will identify some of the principal components of creative learning, describe some instructional strategies associated with them, and speculate about some specific implications of those strategies for music education.

## A model for creative learning

Building on the approach of Osborn (1953), Parnes et al. (1977), and Torrance (1974, 1979), this paper will treat "creativity" as a practical, educationally relevant concept, rather than as a mysterious artistic or philosophical problem. We treat creative learning—the opportunity for the learner to function effectively in independent and original ways—as a goal of considerable value for education. In another source (Treffinger, 1980), a basic model for describing creative learning has been proposed. This model, presented in Figure 1, involves three levels of cognitive and affective processes: divergent functions; complex thinking and feeling processes; and involvement in real problems or challenges. This model may be helpful in understanding some of the ways educators can guide students toward creative learning.

### LEVEL 1: DIVERGENT FUNCTIONS

Divergent thinking—the ability to generate many different or unusual responses—has long been considered a

fundamental (if controversial) component of creative learning. Certainly there are few today who would equate an operational variable as narrow and specific as divergent thinking with the broader concept of "creativity." Yet it seems clear that some of the most basic considerations in human creativity begin with the ideas of "openness," "possibilities," and "originality." Creativity, as most of us view it, involves developing many ideas, looking for new perspectives or relationships among data, and seeking possibilities that others might miss. Thus, it is productive to view divergent thinking as a necessary, but not sufficient, dimension of the larger concept of creativity. These abilities are also associated with numerous facilitation techniques that are readily defined and implemented in the classroom, so they also provide us a starting point with considerable instructional utility.

In the affective domain, the "openness" of divergent functions is represented by such variables as curiosity, willingness to take risks, tolerance of ambiguity, and receptiveness to new experiences. One must not only know how to generate ideas; one must also have confidence that the problem can be solved and in one's own ability to solve it.

The first level of the creative learning model emphasizes the receptivity or sensitivity of the individual to opportunities for creativity, confidence in thinking imaginatively and openly, and the development of fundamental tools or skills for producing ideas.

### LEVEL 2: COMPLEX THINKING AND FEELING PROCESS

The second level extends and expands upon the fundamental divergence of Level 1, since effective creativity requires more than merely the courage and skills of adventurous thinking and a flow of ideas. Creative learning also requires the ability to organize, interpret, analyze, synthesize, and evaluate possibilities (Bloom et al., 1956). In addition, more complex tools for creative production—such as

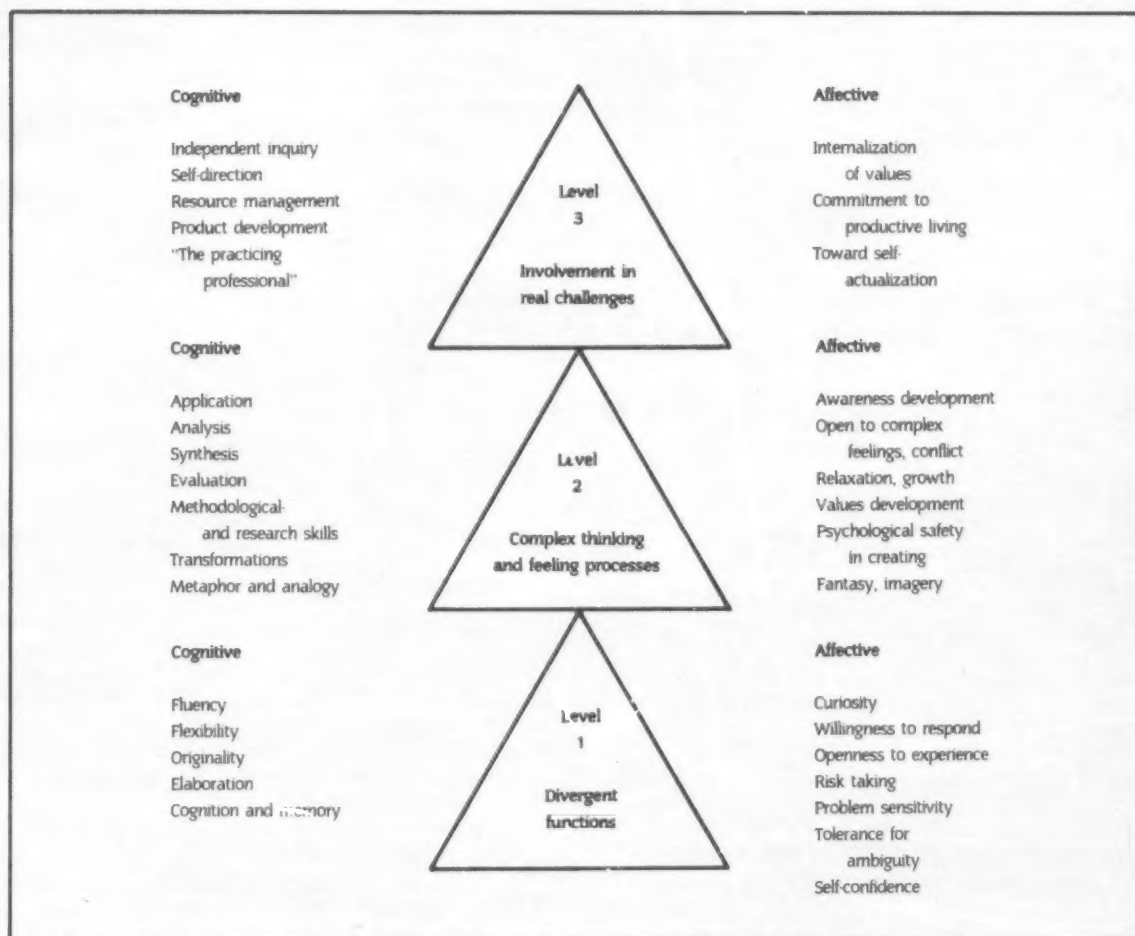


Figure 1. Model for creative learning. (From *Encouraging Creative Learning for the Gifted and Talented: A Handbook of Methods and Techniques*, by D. J. Treffinger, Ventura, Calif.: Ventura County Superintendent of Schools, 1980, p. 20.)

metaphorical, analogical, or transformational thinking—must be acquired. Methodological and research skills are necessary for productive inquiry, and comprise an important aspect of Level 2. Finally, creative learning progresses from using very simple tools (as in Level 1) to more complex, systematic approaches to problem solving, such as the use of synectics (Gordon & Poze, 1980) or creative problem solving (Noller, 1977; Noller, Parnes, & Biondi, 1977; Noller, Treffinger, & Houseman, 1979; Parnes et al., 1977).

In the affective domain, we must recognize that, as more possibilities are recognized, there will also be greater opportunity for disagreements; thus, we need to be able to manage many competing alternatives comfortably, and to deal productively with stress and tension among ideas.

#### LEVEL 3: INVOLVEMENT IN REAL CHALLENGES

Whereas Levels 1 and 2 involve dimensions of creative learning that emphasize individual and group instructional possibilities, creative learning necessarily extends beyond

"lessons to be learned." It is not sufficient to learn about creative thinking methods and techniques or to engage in numerous practice exercises. Eventually, it is imperative to deal with the creative wrestling and struggling that involves real problems and challenges for the person.

#### Instructional implications

Let us consider five general implications of the creative learning model for instructional practice.

1. *Creative learning and its facilitation represent a progression of instructional challenges, from simple to complex.* The model proposes that effective instruction in creative learning should begin with opportunities for students to learn and use basic tools of idea generation, then progress to learning and practicing more complex systems of idea development and problem solving, and then put those skills to use in real situations.

In relation to the most basic methods and techniques, there are many resources available for the teacher (e.g., Callahan, 1978; Feldhusen & Treffinger, 1980; Treffinger,

1980). More than 65 commercially published curriculum resources, covering many curriculum areas, use these methods and techniques. Indeed, the problem has not been a scarcity of effective resources, but to prevent creativity development from being limited to these basic resources. Too often, programs to foster creative thinking in the school fail to proceed beyond the initial step of divergent thinking.

The more complex levels of creative learning require an instructor or facilitator who is both knowledgeable of more advanced techniques and systems and experienced in using them. A recent study by Foucar-Szocki (Note 1) presented evidence that effective facilitation of students' creative learning involves a combination of knowledge of creativity, supportive personal characteristics on the part of the facilitator, and effective use of group management and idea development methods; that is, effective facilitation emerges not only from what you know, but also from what kind of person you are and how you work with the students. Overall, then, our view is that more complex levels of creative learning call for more complex and skilled action by the instructor.

2. *In creative learning, the student's response is more critical than the materials used.* We must not allow ourselves to become so interested in our methods, techniques, and materials—the things that we do to the student, if you will—that we overlook the simple notion that creativity resides in the student's responses. After more than a decade of research with instructional materials designed to foster creative thinking, it is fair to conclude that such programs are neither teacher-proof nor student-proof.

There is a two-fold challenge here: first, to help the teacher learn how to move beyond the "bag-of-tricks approach," and second, to guide the teacher in analyzing students' responses so as to recognize creativity more effectively. We need to progress beyond "dot-to-dot creativity," in which the students are all given 10 minutes a day to do their creativity exercises in their creative learning workbooks. We must also be sensitive to ways in which students' creative responses may vary. Some students will use creative thinking more readily or frequently in their approach to learning; demonstrate greater intensity or personal investment in solving problems; consistently display exceptional quality or complexity in their responses; or demonstrate a spontaneous direction toward application of creative thinking skills in real problems.

3. *Creative learning is systematic and carefully planned.* Creativity does not arise (except by happy accident) from an instructional environment in which the instructor abandons an active instructional role and merely sends the students off on their own way. Effective facilitation of creativity and problem solving involves a structure from which effective and autonomous decision making can emerge (Treffinger & Barton, 1979). As paradoxical as this may seem, structure may produce, rather than restrict, freedom to create.

4. *Creative learning is active and potentially transfor-*

*mational.* Although the early stages of creative learning involve mastering the tools of creative thinking and problem solving, the essence of creative learning rests in the model's upward movement toward independent action in dealing with real challenges. This requires a view of the student as active rather than passive and challenges us to provide learning that extends beyond the "controlled," teacher-centered curriculum into life experiences. Such exploration naturally carries with it the potential to transform both the curriculum and the people involved.

It is this potential for transformation that may lead us to reexamine some of our cherished traditional beliefs about what learning is "significant" and about how to facilitate personally significant learning (Rogers, 1969). In addition, we must learn to deal with the uneasiness that comes from knowing that we may not be able to keep our students' learning neatly under our own control. It is more comfortable for us to know in advance exactly what each student will know and what outcomes will be attained as the results of a particular unit of instruction. Thus, we sometimes want students to be creative, but not so creative that they ask questions we would rather not be asked or find answers that we would rather not know. Becoming involved in fostering creative learning may, to a significant degree, demand that we learn to release some of the security and control that has for so long made teachers feel comfortable.

5. *Creative learning is as much concerned with the future and the unknown as with the known of the present and past.* In our efforts to promote creative learning, we must emphasize students' ability to deal with problems and challenges of the future. These are often issues that we may not be able to define or describe in advance. Aside from the rapid pace of change in the issues now before us and the complex problems presently being confronted, our students will face problems in 10 or 20 years we cannot now envision. Creative learning is concerned, by its very nature, with helping students free themselves of their dependence on us for wisdom, counsel, and judgment, as they move toward maturity.

#### **Implications for music education**

Instructional procedures and resources for fostering creative learning can surely be applied as easily in music education as in any other discipline. My confidence in this assertion arises from my sense of the power and robustness of creative learning, rather than from any basis of personal experience or research in music. (I am among the musically disadvantaged, if such a group of handicapped citizens were to be recognized, but that is a tale for telling at another time.) Let us consider some basic illustrations of possible applications of the creative learning model in music, designed merely to be springboards for your investigation of more sophisticated and appealing applications.

In Level 1 (divergent functions) we emphasize many methods and techniques than can help open up possibilities and stimulate unusual ideas or original alternatives. Questions that begin with phrases such as "What if . . ."

or "Just suppose . . ." can be useful in helping students begin thinking divergently. Some samples:

Just suppose that it was against the law to sing.  
Just suppose you could purchase shower curtains that play music.  
What if all musical instruments sounded alike?  
What if there were no sharps or flats?

Another Level 1 technique is known as attribute listing. Consider, for example, a class planning a field trip to a shopping mall. How might the music teacher participate in preparation for the field trip and stimulate some creative thinking? You might begin by listing some general characteristics of a shopping mall: stores, clerks, shoppers, corridors, elevators or escalators, signs or advertising displays, parking lots. Take each of these attributes and find ways that music is (or might be) involved. Some obvious responses might be, "Choirs or choral groups singing in the corridors; shoppers whistling or humming a tune; recorded music in the stores or elevators." Can you think of others? Can you find some new and unusual possibilities? (The signs? The parking lot?)

In the more complex Levels 2 and 3, in which creative learning is more extensive and systematic, illustrations are more elaborate and hence more difficult to report in a brief paper. We can at least set the process in motion for you, however, by illustrating some sample starting points for creative problem solving.

We begin, as does so much human problem solving in reality, with a general concern that is often vague and broadly defined; for brevity, we call it the Mess. Suppose, for example, that our Mess is to find some new applications of creativity in music education.

We proceed to the step called *fact finding*, in which we attempt to observe, review, and note as much information or data and as many facts and questions as possible regarding the Mess. Here are some basic "facts" that came to mind regarding our sample Mess:

The U.S. has a large recording industry.  
Differences: kinds of music, where performed, for whom.  
Some people write reviews of music.  
Musical symbols: well-organized, meaningful.  
Some combinations are harmonious, others discordant.  
Not everyone agrees as to which of the above is which.  
Uses of music: entertain; express; provide background (movies, Muzak, etc.).  
Sounds that are musical can be made by many things.  
Performing takes lots of practice.  
Most excellent performers start really young, practice a lot, and have rigorous mentors.  
Pop groups make tons of money.  
Concerts and symphonies are considered "cultural."  
Appreciation means many different things to many people.  
Music forms: rock, jazz, opera, etc.

Music has a long history in many parts of the world.  
Music can portray and stimulate many emotions.  
Many vocations involve music: composing, arranging, conducting, performing, scoring, etc.

Do you find that some possible applications are beginning to jump out at you? Let's move to the next step: *problem finding*. In this step, we sort through our list of data, ideas, and questions from the previous step, and attempt to find some specific problems or subproblems that might be worth investigating. We begin these with the phrase, "In what ways might we . . ." Some samples:

In what ways might we . . .  
make up sound tracks of our own for films?  
use new objects to create music?  
develop our own musical productions?  
compare different music forms?  
analyze reactions to music?  
study the lives and times of famous musicians?  
study careers in music?  
find ways to enhance the use of music around us?  
express our ideas and feelings in new music?

Next, we select problem-finding statements that seem to address some significant or promising issues, and proceed to the step of *idea finding*. During this stage, we find as many ideas as possible to respond to that "In what ways might we . . ." question. (That is why the question was worded the way it was; our goal is to stimulate many possible ideas, including some new combinations and unusual possibilities, not just one solution.) In *solution finding*, we generate and apply many criteria for evaluating our list of ideas, and in *acceptance finding*, we select the most promising ideas and develop a specific plan of action for implementation.

As I have attempted to convey with the Mess selected as an example, the creative problem solving approach can be used by a teacher or a group of teachers, or by a teacher with a group of students, to formulate a plan for creative action in a particular subject area. It can be used, for example, as a springboard for designing new units of instruction, for group projects, or to provide group practice for problem solving. It can also be used for individual students or small groups, to help design advanced enrichment or independent study projects. As students progress from working on teacher-designed or class-designed exercises in problem solving (which may be valuable for their own content as well as for development of proficiency in problem solving methods) to identification of real problems of students' own design, we move from Level 2 to Level 3 in the creative learning model.

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# Summary

WILBERT J. McKEACHIE

## Ann Arbor III: Summary Comments

This symposium was designed to deal with two themes—motivation and creativity. We discovered as the week went on that these two themes are not separable; rather they are inextricably linked. Concepts developed in motivation papers were echoed in papers on creativity, and factors influencing creativity turned out to be those having to do with motivation as well. Consequently, in these closing comments I simply want to highlight some of the themes or concepts that appeared in the papers of the week without dealing separately with the topics of motivation and creativity.

In the first paper, Nicholls contrasted task involvement and ego involvement, and this dichotomy came into view in a number of forms throughout the week. Some of the speakers spoke of it in terms of intrinsic motivation versus extrinsic motivation. The same general point was involved in Raynor's distinction between open-ended and closed goals or careers. As I think back, I feel that I tended too much to immediately link intrinsic with "good" and extrinsic with "bad." In fact I was too ready to accept the dichotomy itself. I suspect that, as in most dichotomies, the truth is somewhat more complex. Effective education involves gradations between the intrinsic and extrinsic ends of the scale—combinations of intrinsic and extrinsic, or perhaps interactions with other dimensions of motivation.

One of the major goals of all teaching is that of developing and enhancing intrinsic motivation—joy in discovery, in learning, and in high levels of performance. Music teachers are fortunate. There is much natural joy in music. To some extent the task of the music teacher is quite different from that of teachers in areas where students approach the subject with apprehension rather than with

enjoyment. A goal of music education is to enhance, or at least not to decrease, the enjoyment students already have in music.

What have we learned about factors that enhance intrinsic motivation for producing and appreciating music? One principle seems to be that music close to the students' interests but somewhat more complex than the music they already enjoy is likely to be stimulating and motivating. The importance of perceived difficulty as a factor affecting both motivation and creativity came out in the papers of Wallach, Maehr, Parsons, and in other discussions. In short, the teacher's task is to set challenging, but not discouraging, tasks for students. Simonton noted that music historically has moved toward greater complexity and that the most popular themes are moderately complex.

The problem for teachers is that what is a challenge for one student may be perceived as impossibly difficult for other students or as too simple to be interesting for still others. This often means that in group instruction the teacher is faced with the question of how to provide special challenges for particular subgroups of students. Traditionally, music teachers have solved this problem by assigning special roles to students of differing talents: for example, solo parts, ensembles, or even separate instrumental or choral groups for students of differing abilities or interests.

A second factor important for motivation and creativity is choice. Giving students some choice over the music to be performed or the kind of performance not only provides feedback to the teacher about what the students like, so that appropriate tasks can be presented, but also increases students' sense of responsibility and investment in the activity. Providing choices may help to develop

Raynor's "open-path striving" in which new possibilities develop as one proceeds.

A third factor influencing intrinsic motivation is the role of the teacher as a model. Gryskiewicz, Simonton, and Shetler (a discussant) all presented evidence during the symposium on teachers as role models in the development of student creativity and motivation.

A fourth theme of practical advice lies in the kind of feedback provided to students. Speakers stressed the importance of using encouragement rather than praise or reproof as a device for helping students correct mistakes and point to higher levels of performance. Covington made the point that students need to feel that ability is learnable, not something that is fixed and unchangeable.

Both in the areas of motivation and creativity, the speakers have emphasized the concept of self-competence. The students' sense of worth—of ability to do well—is important both for motivation and creativity, as indicated in the papers of Wallach and Treffinger. This is an example of how a simple equation of intrinsic motivation as "good" and extrinsic motivation as "bad" may break down. It is likely that extrinsic goals, such as rewards for drill and practice in developing basic skills, may be a necessary prelude to development of a sense of self-competence. High levels of performance depend on long hours of practice, and although such practice can be motivated intrinsically, there probably are times, particularly in the early stages of learning, when extrinsic rewards may be necessary to get students over the hump of perceived lack of progress and boredom.

Finally, social interaction has been a common theme. Support from peers, parents, and teachers is an important motivational factor, and potentially important in facilitating creativity.

The foregoing elements contributing to positive motivation for music do not provide a complete picture of the

major concepts discussed, since we have also had a good deal of discussion of anxiety about performance, the fear of failure, and the sense of shame when one does poorly. Although a sense of competence may increase one's intrinsic enjoyment in music, a sense of incompetence and anxiety about failure is often a deterrent to learning. How can teachers help avoid these negative aspects of motivation?

We have already seen some possible aids. Covington's emphasis on teaching that ability is learnable and changeable is one. Encouragement that points to what students can do to improve and helps them avoid a sense of helplessness and hopelessness is another. Frequently a sense of failure and anxiety arises even when students are making progress because they are not able to see the progress they are making. Thus, giving students an opportunity to hear examples of how they have improved and pointing out such improvement to them is likely to be helpful. For those experiencing high fear of failure, it may be helpful to reduce the risk of public embarrassment by group performance or performance before supportive friends rather than individuals whose opinion may be feared by the student. Interestingly enough, we have seen that stress is not harmful to those with a high sense of self-competence. Thus the kinds of performance stress required in developing high levels of music talent are not necessarily harmful to motivation or to creativity.

There were numerous other informative and interesting points. I think I can speak for the psychologists in reporting that the discussion was valuable to us. Clearly this was not a case of one discipline carrying its insights to another like missionaries preaching the gospel to the heathen. Rather, the symposium was one in which there was a good deal of communication going both ways, and I trust that both disciplines will benefit from it.

# Official Participants

## Panel

- FRANCIS X. BARRON, Research Psychologist, University of California, Santa Cruz (paper not submitted)
- MARTIN V. COVINGTON, Professor of Psychology, University of California, Berkeley, and Research Psychologist, Institute of Personality Assessment and Research
- STANLEY S. GRYSKIEWICZ, Director, Creativity Development Program, Center for Creative Leadership, Greensboro, North Carolina
- MARTIN L. MAEHR, Professor of Educational Psychology and Associate Director of the Institute for Child Behavior and Development at the University of Illinois at Urbana-Champaign
- JOHN G. NICHOLLS, Associate Professor of Educational Psychology, Purdue University, West Lafayette, Indiana
- JACQUELYNNE ECCLES (PARSONS), Associate Professor, Department of Psychology, The University of Michigan, Ann Arbor
- JOEL O. RAYNOR, Associate Professor, Department of Psychology, State University of New York at Buffalo
- DEAN KEITH SIMONTON, Associate Professor of Psychology, University of California at Davis
- DONALD J. TREFFINGER, Professor of Creative Studies, State University College at Buffalo, New York
- MICHAEL A. WALLACH, Professor, Department of Psychology, Duke University, Durham, North Carolina

## Dialog Committee

- CHARLES R. HOFFER, Indiana University, Bloomington
- MARY E. HOFFMAN (chairperson), University of Illinois, Urbana
- SALLY A. MONSOUR, Georgia State University, Atlanta
- ROBERT G. PETZOLD, University of Wisconsin, Madison

## Discussion Group Leaders

### MOTIVATION

- HAL ABELES (Group 1), Teachers College, Columbia University, New York
- HENRY L. CADY (Group 2), University of Delaware, Newark
- IRMA H. COLLINS (Group 3), Murray State University, Murray, Kentucky
- CATHERINE NADON-GABRION (Group 4), The University of Michigan, Ann Arbor
- PHYLLIS E. DORMAN (Group 5), University of Florida, Gainesville
- WARREN E. GEORGE (Group 6), University of Cincinnati, Ohio
- GARY L. MARTIN (Group 7), University of Oregon, Eugene
- BENNET REIMER (Group 8), Northwestern University, Evanston, Illinois
- JACK A. TAYLOR (Group 9), Florida State University, Tallahassee
- EDGAR A. TURRENTINE (Group 10), University of Minnesota, Minneapolis

- BARRIE WELLS (Group 11), Arizona State University, Tempe
- MARILYN P. ZIMMERMAN (Group 12), Champaign, Illinois

## CREATIVITY

- JO ANN C. BAIRD (Group 1), Boulder Public Schools, Boulder, Colorado
- JACKIE BOSWELL (Group 2), Arizona State University, Tempe
- JAMES HANSHUMAKER (Group 3), University of Southern California, Los Angeles
- CATHERINE NADON-GABRION (Group 4), The University of Michigan, Ann Arbor
- LENORE POGONOWSKI (Group 5), North Texas State University, Denton
- CARROLL A. RINEHART (Group 6), Tucson Unified School District, Arizona
- DONALD J. SHETLER (Group 7), Eastman School of Music, Rochester, New York
- RONALD THOMAS (Group 8), Virginia Commonwealth University, Richmond
- LAREE M. TROLLINGER (Group 9), Kutztown State College, Kutztown, Pennsylvania
- GERALDINE M. WARD (Group 10), Westminster Choir College, Princeton, New Jersey
- PETER R. WEBSTER (Group 11), Case Western Reserve University, Cleveland, Ohio
- LEONA B. WILKINS (Group 12), Northwestern University, Evanston, Illinois

## MENC Committee on Interdisciplinary Programs

- WILLIAM S. ENGLISH (Chairman), Arizona State University, Tempe
- GERARD L. KNIETER, The University of Akron, Ohio
- PAUL R. LEHMAN, The University of Michigan, Ann Arbor

## Administration and Staff

- DALE E. BAER (Graduate Student Assistant), The University of Michigan, Ann Arbor
- EVELYN M. BAER (Graduate Student Assistant), The University of Michigan, Ann Arbor
- JOHN B. COX (Director of Communications), Music Educators National Conference, Reston, Virginia
- DONALD W. DILLON (Executive Director), Music Educators National Conference, Reston, Virginia
- ROBERT T. FADDEN (Graduate Student Assistant), The University of Michigan, Ann Arbor
- ROBERT A. GILLESPIE (Graduate Student Assistant), The University of Michigan, Ann Arbor
- PAUL R. LEHMAN (Project Director), The University of Michigan, Ann Arbor
- WILBERT J. MCKEACHIE (Special Consultant), The University of Michigan, Ann Arbor
- RICHARD C. SANG (Graduate Student Assistant), The University of Michigan, Ann Arbor